RMS COST MODEL USER'S MANUAL

James E. Kirchmer

Technology, Incorporated

Prepared for:

Army Aviation Systems Command

September 1975

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INSTRUMENTS AND CONTROLS DIVISION

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By:

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This manual provides a detailed description of the cost input required to operate the RMS Cost model; the descriptions, flow-charts and source listings for the operation and maintenance cost computation subroutines; a complete source listing of the RMS Cost program with annotations for RMS code modifications; and a sample of the cost-information tables.

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FOREWORD

This user's manual for the modified RMS (Reliability and Maintainability Simulator) computer program was prepared by Technology Incorporated and submitted per Item No. A002 of Contract DAAJ01-74-C-0839(P1G) to the R&M Division of the AVSCOM Product Assurance Directorate. Mr. Lewis Neri, R&M Division Chief, and Mr. Lindell Whaley were the AVSCOM Contracting Officer representatives. At Technology Incorporated, Mr. Raymond B. Johnson, Systems Analysis Department Manager, supervised the program, and Mr. Larry E. Clay served as Program Manager.

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

1. INTRODUCTION

1.1 Background

As part of its reliability and maintainability program for Army helicopters, the U.S. Army Aviation Systems Command (AVSCOM) has employed the Reliability and Maintainability Simulator (RMS) computer program. Written several years ago in GPSS V, this program has been modified several times to more closely simulate current Army helicopter operation and maintenance. The latest modification adapted the program to the new three-level maintenance concept (AVUM, AVIM, and Depot) to replace the older four-level system (Unit, Direct Support, General Support, and Depot). Among the latest program documents available through AVSCOM are "Army Simulation Model Software Package," "Description of Model Internal Operations," and "ARMS Input Forms."

The RMS program simulates the operation of a company of up to 24 helicopters flying a prescribed mission type. The program simulates the mission call, preflight inspection, flight, post-flight and daily inspections, periodic inspections, unscheduled maintenance, component replacement and repair at the field or depot level, test hops as required, and return of aircraft to the ready pool. Unscheduled maintenance and component failure are simulated on a probabilistic basis; such failures (perhaps causing an abort) can be detected in flight or during any of the inspections. Manpower limitations are included so that aircraft can be held NORM to await available maintenance manpower.

To support the extensive input requirement of the basic RMS program, AVSCOM recently developed a Fortran program to generate a large portion of the input data. This program was used to develop the input data for the seven OH-58 test alternatives presented in the final report for the current contractual development.

1.2 RMS Cost Modification

Since the basic RMS model did not include cost information, it could not project the economic consequences of changes in the system reliability or in the maintenance procedures, nor could it provide the savings associated with an increase in MTBF. Consequently, the R&M Division could not evaluate the cost effectiveness of contemplated reliability improvements.

Accordingly, Technology Incorporated was awarded a contract to modify the RMS model by adding a cost computation to determine total operating and maintenance costs during the simulation period. To execute the RMS program when some or all of the cost input data is unavailable, the modified program was designed to bypass the cost computation on command of an input switch. The revised model is called the RMS COST model.

This user's manual for the RMS COST model contains the operating instructions, the cost input requirements, a description of the Fortran cost subroutines, a detailed listing of the modifications to the basic RMS code, and a sample of the RMS COST output. This manual does not contain instructions or input data requirements for the basic RMS model.

2. RMS COST MODEL INITIALIZATION AND OPERATING INSTRUCTIONS

The RMS COST model program and the Fortran cost subroutines SHFTHR and MCOST must be incorporated in program libraries before the model may be executed. Each program is initialized by combining the program source decks with the Job Control Language (JCL) statements shown in Figures 1 to 3. The subroutines are compiled and loaded as object modules in the appropriate program library by using the JCL statements in Figures 1 and 2. The JCL in Figure 3 is designed to load the RMS COST model onto the disk source program library. Each of the initialization steps requires less than 110K bytes of core storage. The programs need be re-executed only when a source program is changed, and then only the changed program need be rerun.

The cost logic was added to the GPSS RMS model to permit executing the program with or without the cost computations. If the cost tables are to be output, then the JCL in Figure 4 is used in conjunction with the cost input data cards. To execute the 6-month OH-58 demonstration model with cost computations required 300K bytes of core storage and a run time of the central processing unit of about 3.5 minutes. The JCL in Figure 5 should be used when executing the model without the cost data.

To execute the RMS COST model with the cost computations, the SAVEVALUE 1630 must be initialized at zero. The cost card data must be in the sequence called for in Section 3.3, Input Data Card Sequence, and be added to the JCL in Figure 4. To execute the model without the cost computations, SAVEVALUE 1630 must be initialized at one.

```
//FW5ANB     JOB  (2T04,F093,7,110),'RMS-SHFTHR',RFGION=110K
//STEP1    EXFC LMSTESTS,PARM='FORTGPCL(FW5ANB02)'
//SYSLIN   DD
           ALIAS  SHFTHR
//SYSIN    DD  *

           SHFTHR SUBROUTINE SOURCE DECK

/*
//
```

Figure 1. Job Control Language for Adding the SHFTHR Subroutine to Disk

```
//FW5BNB     JOB  (2T04,F093,7,110),'RMS-MCOST',REGION=110K
//STEP1    EXEC LMSTESTS,PARM='FORTGPCL(FW5BNB01)'
//SYSLIN   DD
           ALIAS  MCOST
//SYSIN    DD  *

           MCOST SUBROUTINE SOURCE DECK

/*
//
```

Figure 2. Job Control Language for Adding the MCOST Subroutine to Disk

```
//FW5BNB     JOB  (2T04,F093,7,110),'RMS-SOURCE',REGION=110K
//STEP1    EXEC LMSTESTS,PARM='PU(FW5BNB03)'
//SYSIN    DD  *
./         ADD NAME=FW5BNB03
./         NUMBER  NEW1=100,INCR=100

           RMS-COST PROGRAM SOURCE DECK

/*
//
```

Figure 3. Job Control Language for Adding the RMS-COST Source Deck to Disk

```
//FW5BNB     JOB  (2T04,F093,7,300),'RMS-COST',REGION=300K
//CHG      EXEC LMSTESTS,PARM='PU(FW5BNB03)'
//SYSIN      DD  *
./         CHANGE  NAME=FW5BNB03,LIST=ALL
      INITIAL     X1630,0                                          00036350
//STEP01   EXEC  PROC=LMSTESTS,PARM=PUNCH
//SYSPUNCH   DD  DSN=&&EIGHTY80,UNIT=2314,SPACE=(CYL,(5,1)),
//             DISP=(,PASS)
//DCSOUTDD   DD  UNIT=DISK,DSN=&&SOURCE,SPACE=(CYL,(5,2,1)),
//             DCB=(RECFM=F,LRECL=80,BLKSIZE=80)
//SYSIN      DD  *
             FW5BNB03
//STEP02   EXEC  PROC=LMSPRODS,PARM='G(LMSDUMMY,FW5BNB*)'
//STEP03   EXEC  PGM=DAG01V,PARM=C,TIME=15
//STEPLIB    DD  DSN=*.STEP02.LMS.SYSLMOD,UNIT=2314,
//             VOL=REF=*.STEP02.LMS.SYSLMOD,DISP=(OLD,PASS)
//DOUTPUT    DD  SYSOUT=A
//DINTERO    DD  UNIT=SYSDA,SPACE=(CYL,(5,1))
//DSYMTAB    DD  UNIT=SYSDA,SPACE=(CYL,(5,1))
//DREPTGEN   DD  UNIT=SYSDA,SPACE=(CYL,(5,1))
//DINTWORK   DD  UNIT=SYSDA,SPACE=(CYL,(5,1)),SEP=DINTERO
//DJTAP1     DD  DUMMY
//DJTAP2     DD  DUMMY
//DJTAP3     DD  DUMMY
//DDNWMAST   DD  DUMMY
//DRDSAVE    DD  DUMMY
//DDPUNCH    DD  SYSOUT=B
//DINPUT1    DD  DSN=&&EIGHTY80,DISP=(OLD,DELETE)
//SYSUDUMP   DD  SYSOUT=A
//FT06F001   DD  SYSOUT=A
//FT05F001   DD  *

             COST DATA

/*
//
```

Figure 4. Job Control Language for Executing RMS with COST Logic

```
//FW5BNB      JOB  (2T04,F093,7,300),'RMS',REGION=300K
//CHG       EXEC LMSTESTS,PARM='PU(FW5BNB03)'
//SYSIN       DD  *
       INITIAL    X1630,1                                                  00036350
//STEP01    EXEC  PROC=LMSTESTS,PARM=PUNCH
//SYSPUNCH    DD  DSN=&&EIGHTY80,UNIT=2314,SPACE=(CYL,(5,1)),
//              DISP=(,PASS)
//OCSOUTDD    DD  UNIT=DISK,DSN=&&SOURCE,SPACE=(CYL,(5,2,17)),
//              DCB=(RECFM=F,LRECL=80,BLKSIZE=80)
//SYSIN       DD  *
              FW5BNB03
//STEP02    EXEC  PROC=LMSPRODS,PARM='G(LMSDUMMY,FW5BNB*)'
//STEP03    EXEC  PGM=DAG01V,PARM=C,TIME=15
//STEPLIB     DD  DSN=*.STEP02.LMS.SYSLMOD,UNIT=2314,
//              VOL=REF=*.STEP02.LMS.SYSLMOD,DISP=(OLD,PASS)
//DOUTPUT     DD  SYSOUT=A
//DINTERO     DD  UNIT=SYSDA,SPACE=(CYL,(5,1))
//DSYMTAB     DD  UNIT=SYSDA,SPACE=(CYL,(5,1))
//DREPTGEN    DD  UNIT=SYSDA,SPACE=(CYL,(5,1))
//DINTWORK    DD  UNIT=SYSDA,SPACE=(CYL,(5,1)),SEP=DINTERO
//DJTAP1      DD  DUMMY
//DJTAP2      DD  DUMMY
//DJTAP3      DD  DUMMY
//DDNWMAST    DD  DUMMY
//DRDSAVE     DD  DUMMY
//DDPUNCH     DD  SYSOUT=B
//DINPUT1     DD  DSN=&&EIGHTY80,DISP=(OLD,DELETE)
//SYSUDUMP    DD  SYSOUT=A
/*
//
```

Figure 5. Job Control Language for Executing RMS Without COST Logic

3. RMS COST INPUT REQUIREMENTS

3.1 Introduction

The number of input cards required to execute the RMS COST model is determined by the number of MOS levels, subsystems, and components in the simulation.

One card must be provided for each MOS, subsystem, and component, and the card format must meet the specifications described in Section 3.2, the Input Data Card Parameters. An additional input data card, the flight cost card, must always be provided as the last card of the input deck. A card with 999 in columns 1 to 3 must be provided for each set of input cards (AVUM, AVIM, DEPOT, SUBSYSTEM and COMPONENT). The 999 card follows the last cost data card for each set. If no cost data is input for a given set, the 999 must still be used. The minimum number of cost input cards to execute the RMS COST model is six, five cards with 999 and the flight cost card.

No cost input cards are required to execute the RMS COST model without the cost computations.

3.2 Input Data Card Parameters

(1) AVUM MOS INPUT CARD (Figure 6)

Columns 1-3 - MOS Number: The number is right justified; column 1 is zero or blank. The value must be greater than zero and less than or equal to 15. The RMS logic currently limits the number of MOS levels to 11.

Columns 4-15 - MOS Title: Expressed in alpha or numeric characters, this title is left justified. The titles appear in the Inspection Cost and Inspection and Unscheduled Maintenance Personnel Cost tables.

Columns 16-22 - Average Hourly Wage: The wage value is right justified with a decimal point in column 20. Zero is an acceptable value.

Columns 23-29 - Average Hourly Overhead Rate: The rate value is right justified with a decimal point in column 27. Zero is an acceptable value.

Columns 30-36 - Consumable Cost per Event: This cost is right justified with a decimal point in column 34. Zero is an acceptable value. This cost covers the tools, rags, and miscellaneous items associated with the MOS level. The program adds this cost everytime the MOS level is called for.

AVUM MOS INPUT CARD

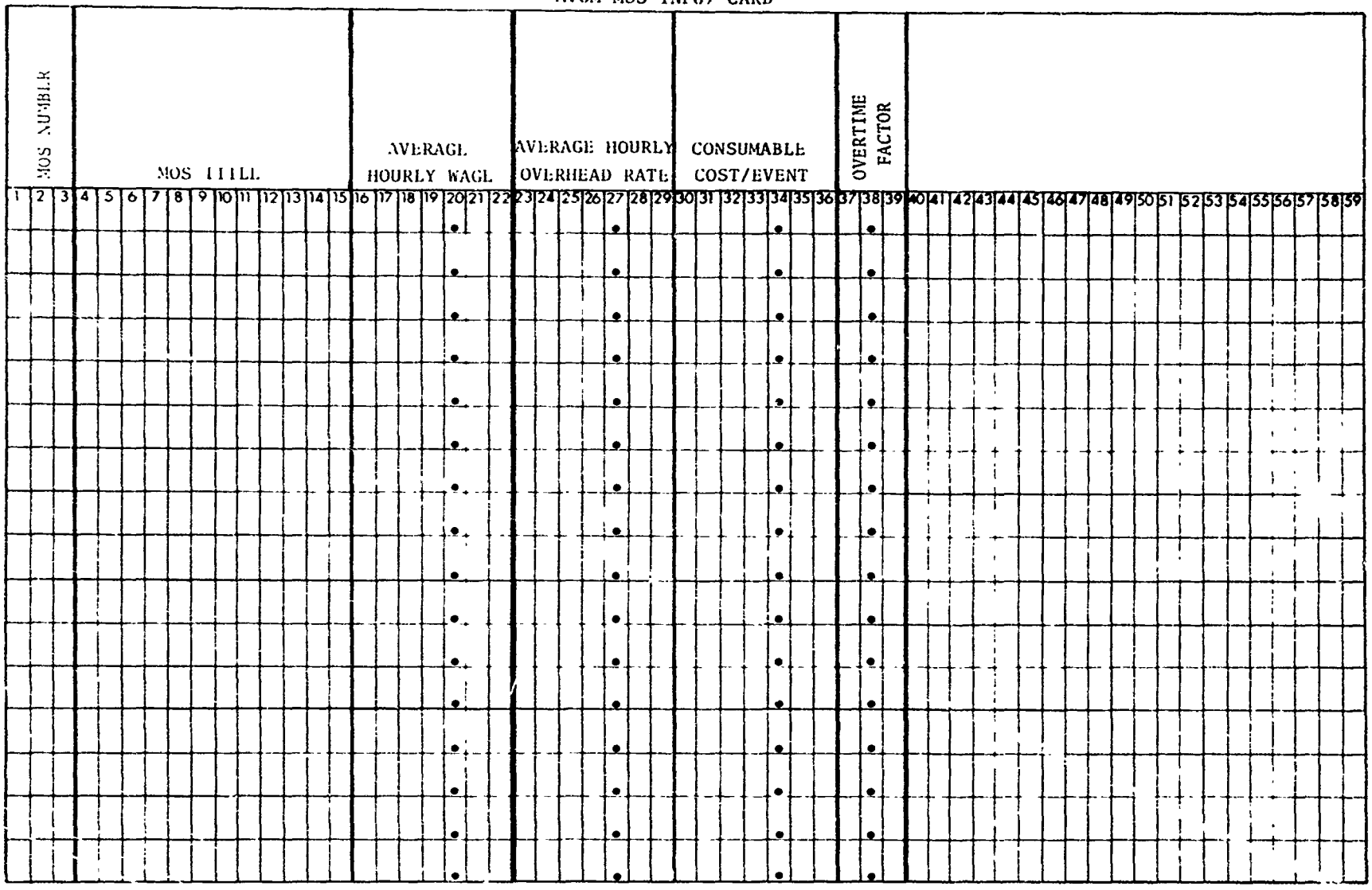


Figure 6. AVUM MOS Input Card Format

Columns 37-39 - Overtime Factor: 0.0 to 9.9.
Overtime Rate = Ave. Hourly Wage * Overtime Factor

(2) AVIM MOS INPUT CARD (Figure 7). This card is the same as the AVUM MOS INPUT card but does not include the overtime factor. The AVIM MOS TITLE is not required for program operation.

(3) DEPOT MOS INPUT CARD (Figure 8). This card is the same as the AVUM MOS INPUT card but does not include the overtime factor. The Depot MOS title is not required for program operation.

(4) SUBSYSTEM INPUT CARD (Figure 9).

Columns 1-3 - Subsystem Number: This number is right justified and must be greater than 0 and less than or equal to 25. Column 1 must be zero or blank. The assigned subsystem number must agree with the number in the basic RMS input (FUNCTION 46 'ELEMENTS TABLE CODE').

Columns 4-15 - Subsystem Title: Expressed in alpha or numeric characters, this title is left justified. The titles appear in the Subsystem Maintenance Action table.

Columns 16-18 - Number of Components in Subsystem: As any number from 1 to 299, this number is right justified.

(5) COMPONENT INPUT CARD (Figure 10)

Columns 1-3 - Component Number: Right justified, the numbers must be 1 to n in sequential order (where n is less than or equal to 299). The assigned subsystem number and subsystem component number must agree with the number in the basic RMS input (FUNCTION 46 'ELEMENTS TABLE CODE').

Columns 4-5 - Subsystem Number: As any number from 1 to 25, this number is right justified.

Columns 6-13 - Component Cost: The cost value is right justified with a decimal point in column 11. Zero is an acceptable value.

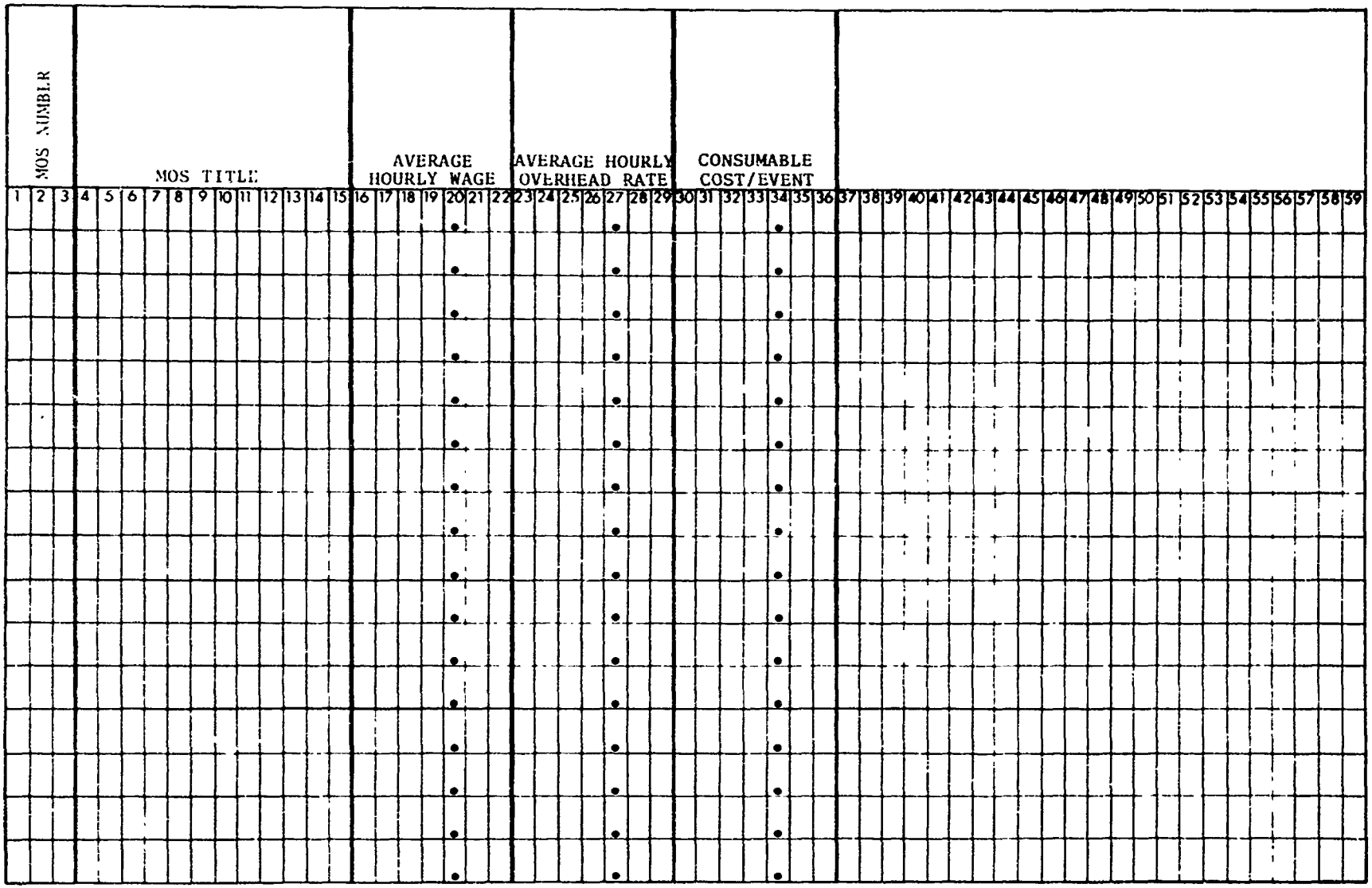


Figure 7. AVIM MOS Input Card Format

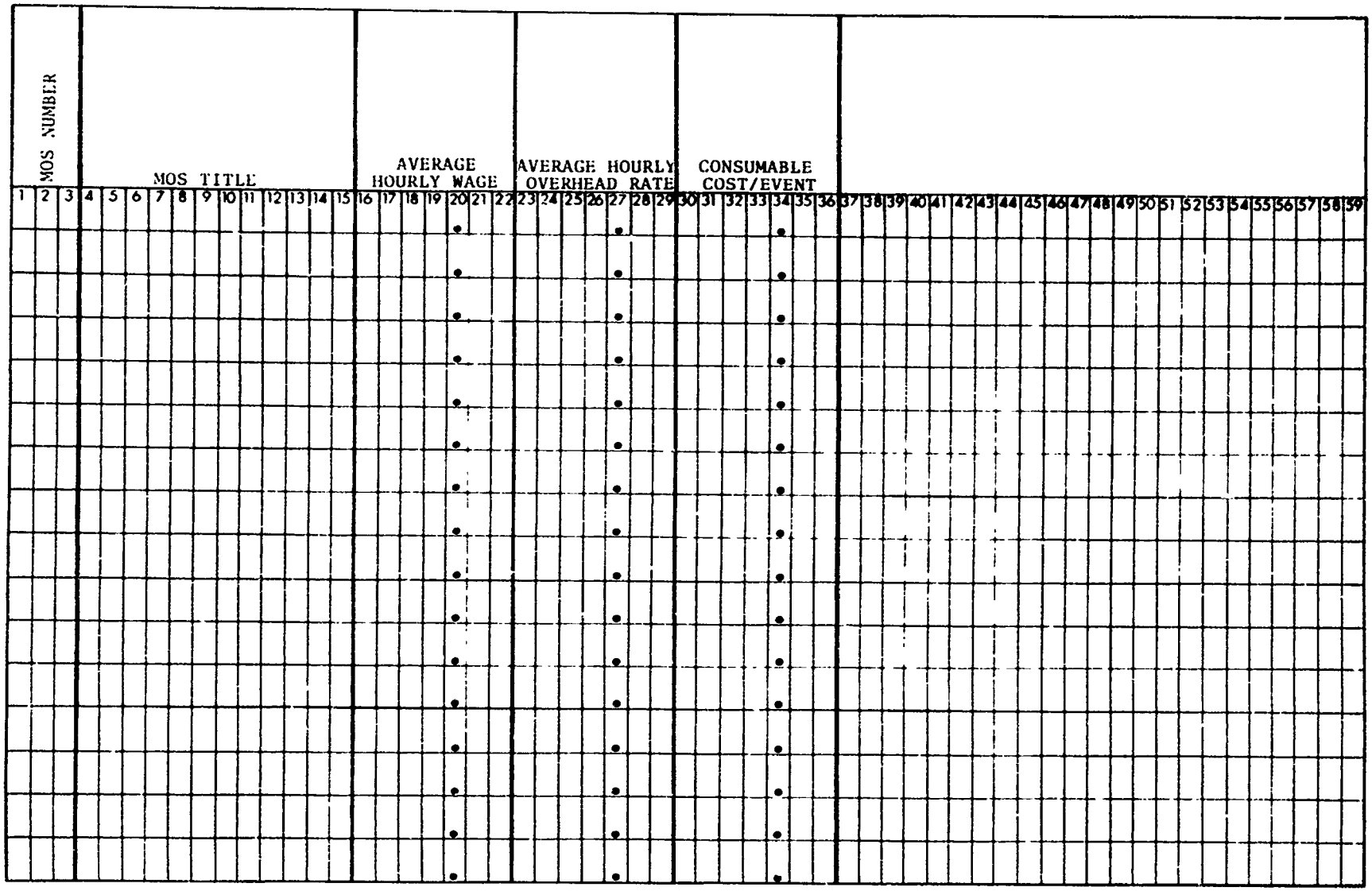


Figure 8. Depot MOS Input Card Format

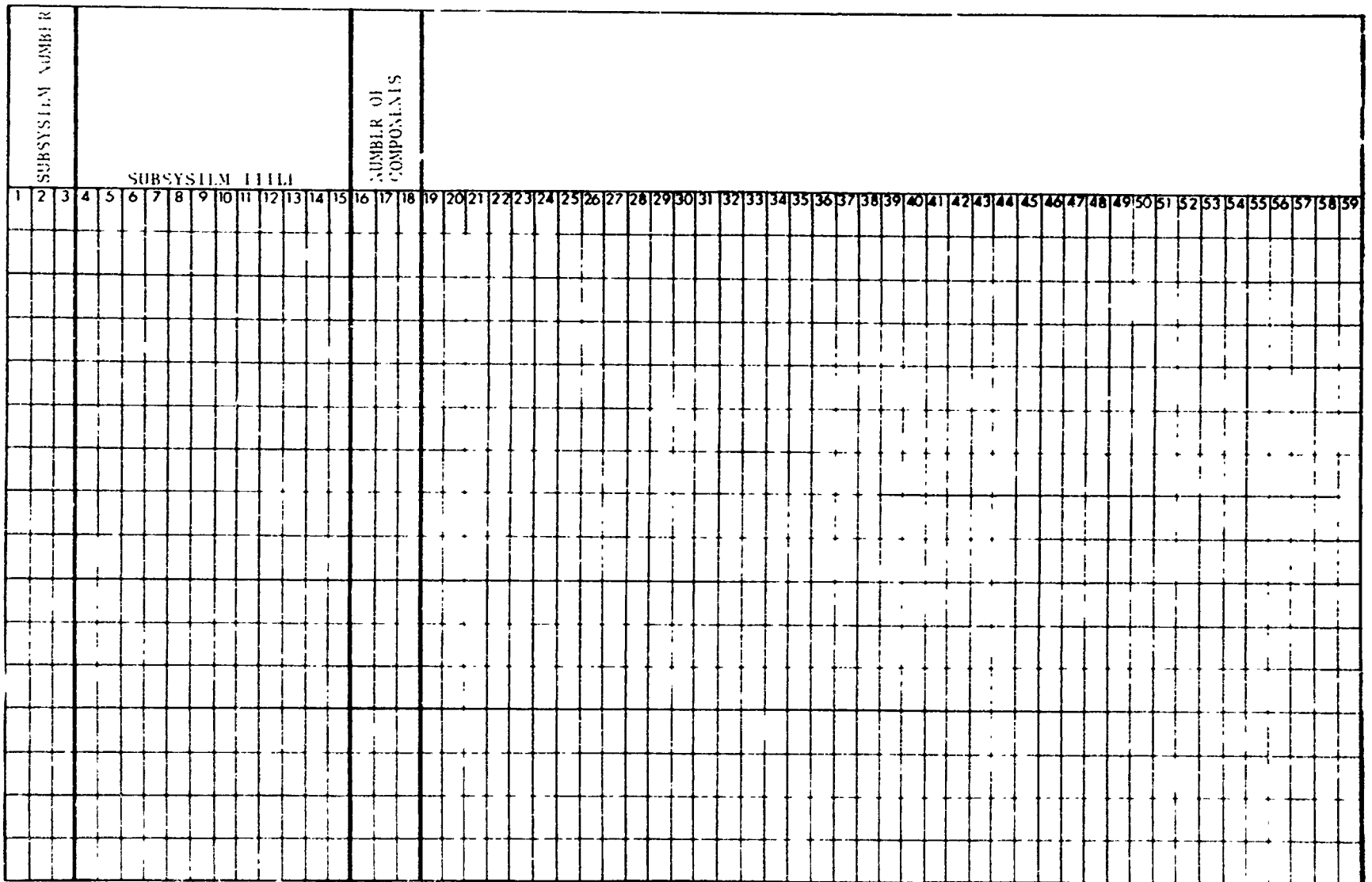


Figure 9. Subsystem Input Card Format

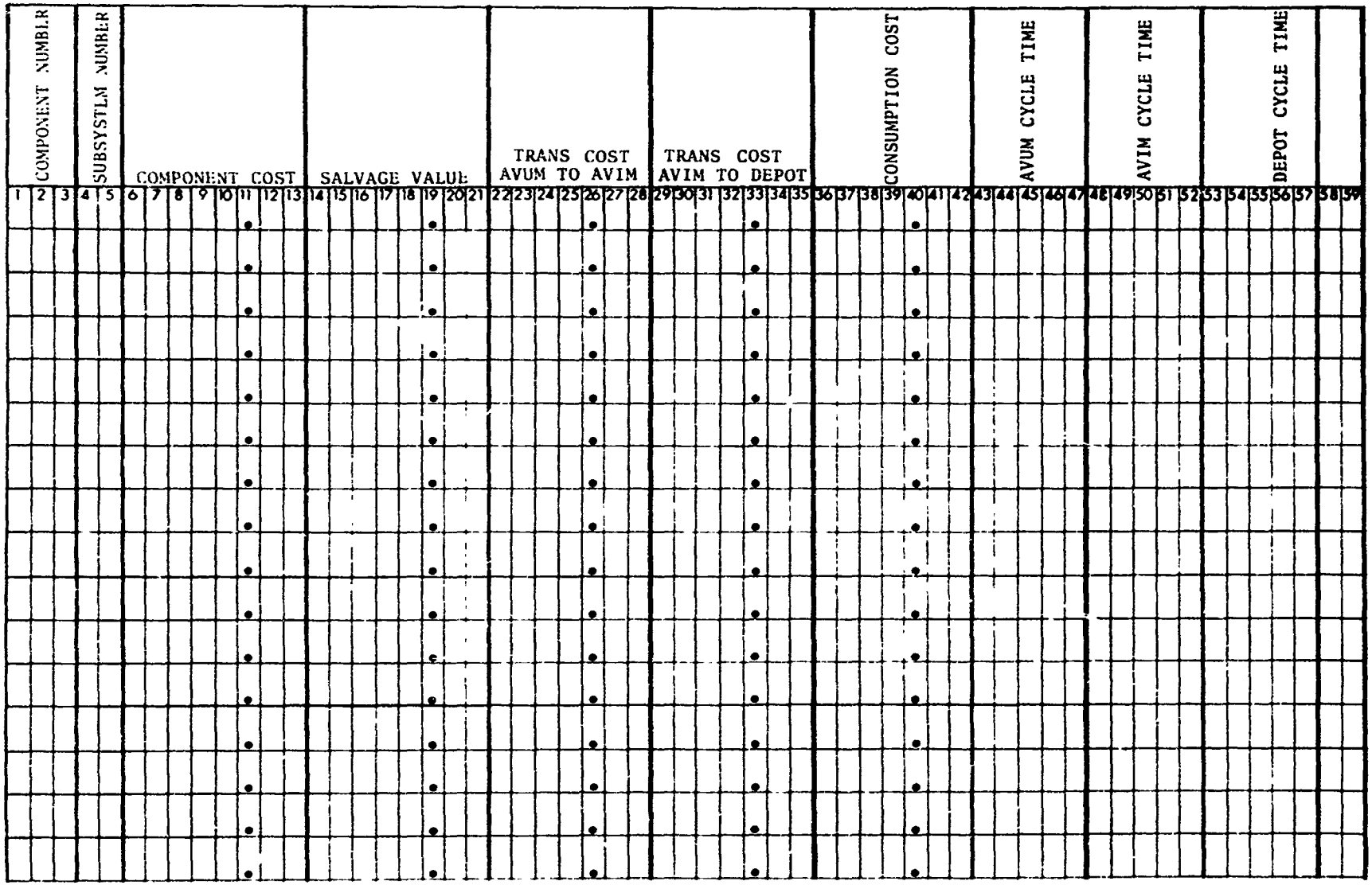


Figure 10. Component Input Card Format

Columns 14-21 - Salvage Value: This value is right justified with a decimal point in column 19. Zero is an acceptable value.

Columns 22-28 - Transportation Cost AVUM to AVIM: This value is right justified with a decimal point in column 26. Zero is an acceptable value.

Columns 29-35 - Transportation Cost AVIM to DEPOT: This value is right justified with a decimal point in column 33. Zero is an acceptable value.

Columns 36-42 - Consumption Cost: This value is right justified with a decimal point in column 40. Zero is an acceptable value. This cost covers the associated component materials (hardware and POL) consumed during an AVIM or depot repair.

Columns 43-47 - AVUM Cycle Time: Elapsed time (hours) from removal of component to completion of repair at AVUM and return to inventory. The time value is right justified. Zero is an acceptable value.

Columns 48-52 - AVIM Cycle Time: Elapsed time (hours) from removal of component to completion of repair at AVIM and return to inventory. The time value is right justified. Zero is an acceptable value.

Columns 53-57 - DEPOT Cycle Time: Elapsed time (hours) from removal of component to completion of repair at depot and return to inventory. The time value is right justified. Zero is an acceptable value.

(6) FLIGHT COST INPUT CARD (Figure 11)

Columns 1-7 - Depreciation Rate per Flight Hour: This rate is right justified with a decimal point in column 5. Zero is an acceptable value.

Columns 8-12 - Flight Cost Per Hour: Flight costs exclude depreciation and POL. This cost is right justified with a decimal point in column 10. Zero is an acceptable value.

Columns 13-17 - Consumable Cost per Flight Hour: POL costs. This cost is right justified with a decimal point in column 15. Zero is an acceptable value.

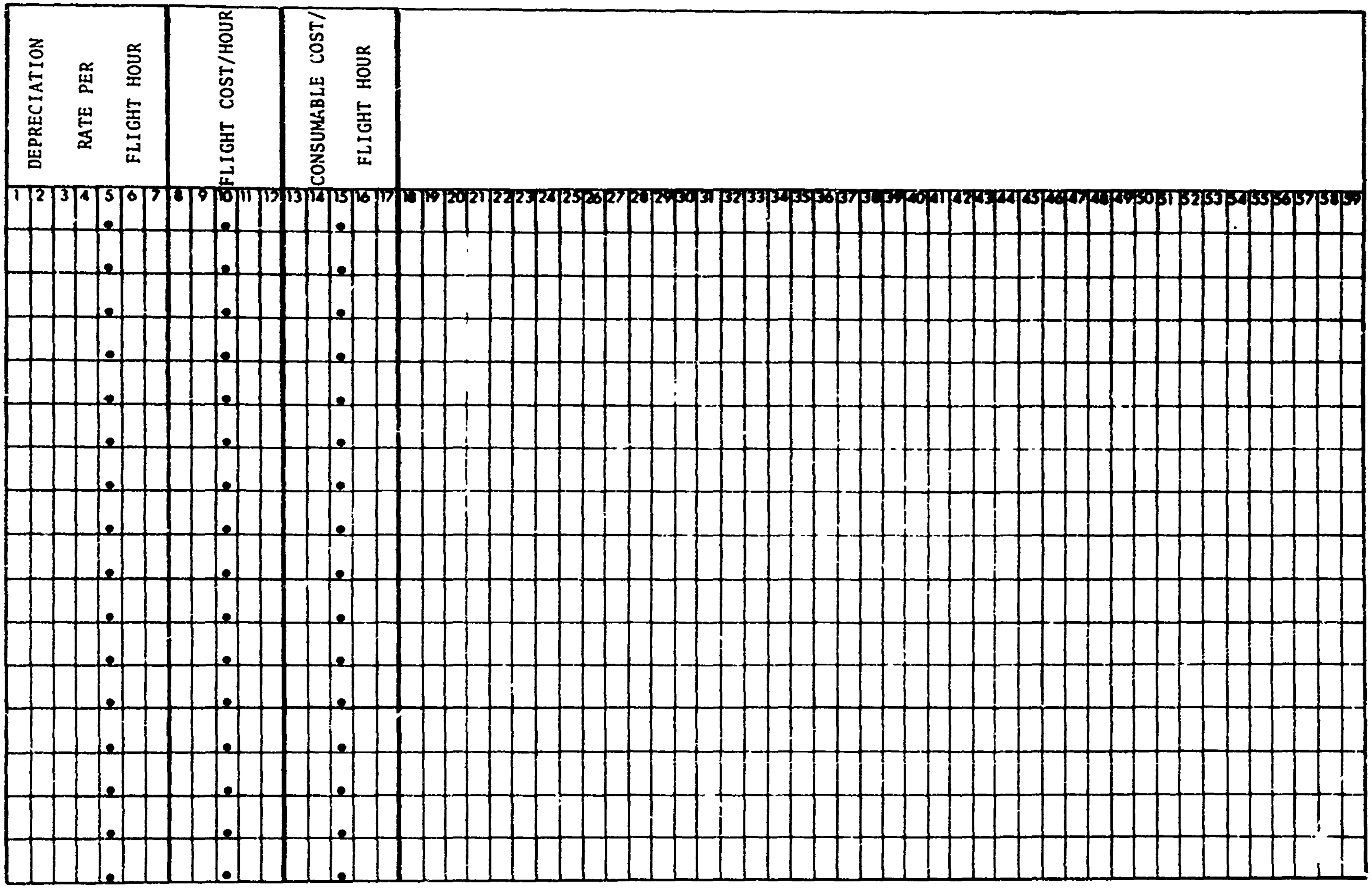


Figure 11. Flight Cost Input Card Format

3.3 Input Data Card Sequence

(1) AVUM MOS INPUT: The maximum number of input cards is 15. There is no minimum number of cards.

(2) 999 in columns 1-3. This card is always required.

(3) AVIM MOS INPUT: The maximum number of input cards is 15. There is no minimum number of cards.

(4) 999 in columns 1-3. This card is always required.

(5) DEPOT MOS INPUT: The maximum number of input cards is 15. There is no minimum number of cards.

(6) 999 in columns 1-3. This card is always required.

(7) SUBSYSTEM INPUT: The maximum number of input cards is 25. There is no minimum number of cards.

(8) 999 in columns 1-3. This card is always required.

(9) COMPONENT INPUT: The maximum number of input cards is 299. There is no minimum number of cards.

(10) 999 in columns 1-3. This card is always required.

(11) FLIGHT COST INPUT: This card is always required and is the last input data card.

Table I lists the complete set of input data cards for the RMS COST model demonstration.

3.4 Error Codes

Error messages are printed when the maximum number of input cards for a given type is exceeded.

Error Code	Type Input	Maximum
01	AVUM MOS	15
02	AVIM MOS	15
03	DEPOT MOS	15
04	SUBSYSTEM	25
05	COMPONENT	299

When the maximum is exceeded, the data cards will continue to be read for the card type input; but the values will not be stored in the array. After a card containing 999 is encountered, the routine to store the next card type input is entered.

TABLE I. RMS COST MODEL CARD INPUT

```
001ON A/C MOS     11.63 000.00 000.00 1.5
002OFF A/C MOS    11.63 000.00 000.00 1.5
003PERIODIC MOS   11.63 000.00 000.00 1.5
004PREFLIGHT      11.63 000.00 000.00 1.5
005DAILY MOS      11.63 000.00 000.00 1.5
006ON A/C MOS     11.63 000.00 000.00 1.5
007AVUM MOS 7     11.63 000.00 000.00 1.5
008AVUM MOS 8     11.63 000.00 000.00 1.5
009AVUM MOS 9     11.63 000.00 000.00 1.5
010AVUM MOS 10    11.63 000.00 000.00 1.5
011AVUM MOS 11    11.63 000.00 000.00 1.5
012AVUM MOS 12    11.63 000.00 000.00 1.5
013AVUM MOS 13    11.63 000.00 000.00 1.5
014AVUM MOS 14    11.63 000.00 000.00 1.5
999
001AVIM MOS 1     11.63 000.00 000.00
002AVIM MOS 2     11.63 000.00 000.00
003AVIM MOS 3     11.63 000.00 000.00
004AVIM MOS 4     11.63 000.00 000.00
005AVIM MOS 5     11.63 000.00 000.00
006AVIM MOS 6     11.63 000.00 000.00
007AVIM MOS 7     11.63 000.00 000.00
008AVIM MOS 8     11.63 000.00 000.00
009AVIM MOS 9     11.63 000.00 000.00
010AVIM MOS 10    11.63 000.00 000.00
011AVIM MOS 11    11.63 000.00 000.00
012AVIM MOS 12    11.63 000.00 000.00
999
001DEPOT MOS 1    11.63 000.00 000.00
002DEPOT MOS 2    11.63 000.00 000.00
003DEPOT MOS 3    11.63 000.00 000.00
004DEPOT MOS 4    11.63 000.00 000.00
005DEPOT MOS 5    11.63 000.00 000.00
006DEPOT MOS 6    11.63 000.00 000.00
007DEPOT MOS 7    11.63 000.00 000.00
008DEPOT MOS 8    11.63 000.00 000.00
009DEPOT MOS 9    11.63 000.00 000.00
999
001STRUCTURE   011
002LANDING GEAR003
003ENGINE ASSY 015
004ROTAT.COMPON031
005HYDRAUL SYS 004
006INSTRUMENTS 010
007ELECTRICAL  009
008FUEL        004
009FLT CONTROLS007
010NAV/COM COMP012
999
00101   664.00   199.20   0.00   0.00   0.00   71   71   71
00201   140.00    42.00   0.00   0.00   0.00  111  111  111
003011A000.00 5400.00   0.00   0.00   0.00   63   63   63
00401   313.00    93.90   0.00   0.00   0.00   91   91   91
00501   562.00   168.60   0.00   0.00   0.00   59   59   59
00601   658.00   197.40   0.00   0.00   0.00   59   59   59
00701    75.00    22.50   0.00   0.00   0.00   61   61   61
00801   389.00   116.70   0.00   0.00   0.00   65   65   65
00901   410.00   123.00   0.00   0.00   0.00   63   63   63
01001   809.00   242.70   0.00   0.00   0.00   85   85   85
01101  1007.00   302.10   0.00   0.00   0.00   62   62   62
01202   202.00    60.60   0.00   0.00   0.00   78   78   78
01302   475.00   142.50   0.00   0.00   0.00   66   66   66
01402     6.00     1.80   0.00   0.00   0.00   92   92   92
```

TABLE I. - Continued

01503	95.00	28.50	0.00	0.00	0.00	128	128	128
01603	1210.00	363.00	0.00	0.00	0.00	104	104	104
0170317562.00		5268.60	0.00	0.00	0.00	63	63	63
01803	7427.00	2228.10	0.00	0.00	0.00	62	62	62
01903	450.00	135.00	0.00	0.00	0.00	62	62	62
02003	3850.00	1155.00	0.00	0.00	0.00	103	103	103
02103	4.50	1.35	0.00	0.00	0.00	90	90	90
02203	50.00	15.00	0.00	0.00	0.00	66	66	66
02303	770.00	231.00	0.00	0.00	0.00	81	81	81
02403	440.00	132.00	0.00	0.00	0.00	66	66	66
02503	1010.00	303.00	0.00	0.00	0.00	68	68	68
02603	684.00	205.20	0.00	0.00	0.00	69	69	69
02703	10.00	3.00	0.00	0.00	0.00	61	61	61
02803	215.00	64.50	0.00	0.00	0.00	76	76	76
02903	115.00	34.50	0.00	0.00	0.00	71	71	71
03004	260.00	78.00	0.00	0.00	0.00	92	92	92
03104	46.00	13.80	0.00	0.00	0.00	83	83	83
03204	1310.00	393.00	0.00	0.00	0.00	88	88	88
03304	45.00	13.50	0.00	0.00	0.00	58	58	58
03404	78.00	23.40	0.00	0.00	0.00	65	65	65
03504	120.00	36.00	0.00	0.00	0.00	58	58	58
03604	2020.00	606.00	0.00	0.00	0.00	81	81	81
03704	2550.00	765.00	0.00	0.00	0.00	69	69	69
03804	20.00	6.00	0.00	0.00	0.00	83	83	83
03904	50.00	15.00	0.00	0.00	0.00	86	86	86
04004	7850.00	2355.00	0.00	0.00	0.00	138	138	138
04104	11.00	3.30	0.00	0.00	0.00	69	69	69
04204	366.00	109.00	0.00	0.00	0.00	133	133	133
04304	20.00	6.00	0.00	0.00	0.00	71	71	71
04404	1035.00	310.50	0.00	0.00	0.00	98	98	98
04504	482.00	144.60	0.00	0.00	0.00	62	62	62
04604	16.00	4.80	0.00	0.00	0.00	64	64	64
04704	13.00	3.90	0.00	0.00	0.00	73	73	73
04804	9.00	2.70	0.00	0.00	0.00	91	91	91
04904	100.00	30.00	0.00	0.00	0.00	74	74	74
05004	1350.00	405.00	0.00	0.00	0.00	138	138	138
05104	20.00	6.00	0.00	0.00	0.00	128	128	128
05204	230.00	69.00	0.00	0.00	0.00	58	58	58
05304	195.00	58.50	0.00	0.00	0.00	98	98	98
05404	1.00	0.30	0.00	0.00	0.00	65	65	65
05504	110.00	33.00	0.00	0.00	0.00	108	108	108
05604	55.00	16.50	0.00	0.00	0.00	94	94	94
05704	25.00	7.50	0.00	0.00	0.00	76	76	76
05804	280.00	84.00	0.00	0.00	0.00	73	73	73
05904	130.00	39.00	0.00	0.00	0.00	61	61	61
06004	50.00	15.00	0.00	0.00	0.00	108	108	108
06105	230.00	69.00	0.00	0.00	0.00	63	63	63
06205	15.00	4.50	0.00	0.00	0.00	63	63	63
06305	863.00	258.90	0.00	0.00	0.00	63	63	63
06405	150.00	45.00	0.00	0.00	0.00	66	66	66
06506	155.00	46.50	0.00	0.00	0.00	138	138	138
06606	134.00	40.20	0.00	0.00	0.00	108	108	108
06706	119.00	35.70	0.00	0.00	0.00	99	99	99
06806	140.00	42.00	0.00	0.00	0.00	100	100	100
06906	486.00	145.80	0.00	0.00	0.00	138	138	138
07006	67.00	20.10	0.00	0.00	0.00	59	59	59
07106	195.00	58.50	0.00	0.00	0.00	68	68	68
07206	110.00	33.00	0.00	0.00	0.00	59	59	59
07306	280.00	84.00	0.00	0.00	0.00	61	61	61
07406	27.00	8.10	0.00	0.00	0.00	58	58	58
07507	18.00	5.40	0.00	0.00	0.00	58	58	58
07607	253.00	75.90	0.00	0.00	0.00	103	103	103
07707	46.00	13.80	0.00	0.00	0.00	98	98	98

TABLE I. - Concluded

```
07807    42.00    12.60    0.00    0.00    0.00    58    58    58
07907   376.00   112.80    0.00    0.00    0.00    76    76    76
08007   300.00    90.00    0.00    0.00    0.00    68    68    68
08107     3.00     0.90    0.00    0.00    0.00    71    71    71
08207     1.50     0.45    0.00    0.00    0.00    58    58    58
08307     4.00     1.20    0.00    0.00    0.00   108   108   108
08408     3.00     0.90    0.00    0.00    0.00    67    67    67
08508    23.00     6.90    0.00    0.00    0.00    69    69    69
08608   595.00   178.50    0.00    0.00    0.00    67    67    67
08708   115.00    34.50    0.00    0.00    0.00    73    73    73
08809   530.00   159.00    0.00    0.00    0.00    58    58    58
08909    33.00     9.90    0.00    0.00    0.00    61    61    61
09009    95.00    28.50    0.00    0.00    0.00    81    81    81
09109   110.00    33.00    0.00    0.00    0.00    65    65    65
09209   116.00    34.80    0.00    0.00    0.00    70    70    70
09309   120.00    36.00    0.00    0.00    0.00    71    71    71
09409   834.00   250.20    0.00    0.00    0.00    73    73    73
09510   263.00    78.90    0.00    0.00    0.00    68    68    68
09610  2625.00   787.50    0.00    0.00    0.00    88    88    88
09710   200.00    60.00    0.00    0.00    0.00    88    88    88
09810   550.00   165.00    0.00    0.00    0.00    60    60    60
09910  2080.00   624.00    0.00    0.00    0.00    88    88    88
10010  3150.00   945.00    0.00    0.00    0.00    60    60    60
10110  3413.00   102.39    0.00    0.00    0.00    73    73    73
10210  2783.00   834.90    0.00    0.00    0.00    68    68    68
10310  4200.00   126.00    0.00    0.00    0.00    77    77    77
10410  4250.00   127.50    0.00    0.00    0.00    73    73    73
10510   800.00    24.00    0.00    0.00    0.00   108   108   108
10610  7800.00  2340.00    0.00    0.00    0.00    60    60    60
999
0015,7820,0010,00
```

4. FORTRAN COST SUBROUTINES

4.1 MCOST Subroutine

4.1.1 MCOST Subroutine Description

When the RMS model is executed with cost alternatives (SAVEVALUE 1630 = 0), the MCOST subroutine module is loaded into core for the duration of the simulation, and the GPSS HELPA block serves as the interface between the RMS model and the Fortran subroutine.

The MCOST subroutine consists of six separate routines: Initialization, Maintenance Action, Inspection Cost, Maintenance Report, Subsystem Report, and Flight Hour Report.

The GPSS program interfaces with MCOST before any transactions are generated. This action causes the Fortran arrays to be initialized and the cost input data cards to be read. Upon completion of this step, control is returned to the main program to begin the simulation. The subroutine is not called for again until a maintenance action occurs or the simulation interval is completed.

During the simulation period the subroutine is called for to tally the subsystem maintenance actions and to compute maintenance costs. Each maintenance action is given an action code number (see Table II) which directs the transaction to the appropriate accounting computations in the Maintenance Action routine.

TABLE II. MAINTENANCE ACTION CODE DEFINITIONS

Code	Description
01	AVUM on aircraft repair
02	AVUM remove and replace
03	AVUM off aircraft repair
04	AVIM off aircraft repair
05	Depot maintenance
06	Condemned component
09	Overtime for AVUM action

The Maintenance Action routine assembles the information essential to the Subsystem Maintenance Action table. The number of occurrences of each maintenance event are counted in array KNTRAY. Each part used at the AVUM, AVIM, or depot is tabulated in array PIPRAY and later used to determine the cost of maintaining the pipeline.

The man-hours, MOS, subsystem, and component of the overtime transactions (IACT=09) are passed to the Maintenance routine and, when combined with the man-hour rate and overtime factor from the AVUM input card, are used to compute overtime

costs for inclusion in the appropriate subsystem maintenance cost.

When a transaction representing an AVUM secondary work center or a multiple-shift action enters the subroutine from the RMS Unscheduled Maintenance routine, the parameter IVALUE (5) is set to 999. This parameter indicates that the event counters had previously been incremented for the transaction by the primary work center or first shift of the multiple-shift action and need not be recounted by the secondary work center or the next shift.

The transaction parameters for the Maintenance Action routine include subsystem number; component number; MOS number; action code; number to indicate time change component, secondary work center, or multiple-shift action; and maintenance man-hours.

When the simulation interval is completed, the MCOST subroutine is called from the Data Compilation routine with the first parameter of the transaction having a value set to the MOS level plus 100. This value indicates that control is to be passed to the Inspection Cost routine.

To compute the values for the Inspection Cost table, the RMS COST model passes to MCOST two separate sets of transaction parameters for each MOS: first, the values for the MOS consumable cost computation, namely, the number of preflight, postflight, daily, intermediate (PMI), and periodic (PMP) inspections, and second, the number of man-hours for each of the same inspection events. After the computations for the MOS are completed, control is returned to the RMS and the cycle is continued until the values for the last MOS have been passed. After the Inspection table is printed, a switch (ISWT) is set which causes the next transaction passed from RMS to branch to the Maintenance Report routine.

The Maintenance Report routine, which prints the Inspection and Unscheduled Maintenance Personnel Cost table, receives the following data from the calling program: AVUM MOS number, available man-hours, man-hours expended, and overtime hours. The direct labor costs are determined from the expended maintenance hours (time directly spent maintaining a component), the hours spent on inspection (array PTOTP), and the AVUM man-hour rates. The indirect labor costs are obtained from the total cost of available manpower less the direct labor cost. The overtime cost is determined from the number of overtime hours, the AVUM man-hour rates, and the overtime factor from the AVUM input card. Control is returned to the RMS COST model which continues passing data until the last MOS has been accounted for. When the MOS level reaches 15, the table is printed and the routine control switch is set so that the next transaction will enter the Subsystem Report routine.

The RMS COST model passes the number of simulation hours to the Subsystem Report routine. This action initiates the cost computations for the Subsystem Maintenance Action table. The

values which were accumulated in the Maintenance Action routine are used to determine the pipeline and maintenance level costs by subsystem. After the table is printed and before returning control to the RMS COST model, the logic control switch is set to branch to the Flight Hour Report routine at the next call.

The parameters passed to the Flight Hour Report routine for the RMS COST Summary table are as follows: flight hours, missions completed, simulation interval, percentage of uptime/total time, percentage of missions flown/missions called, and percentage of missions computed/missions flown. The values from the Flight Cost input card, which are read by the Flight Hour Report routine, are used with the above parameters to produce the RMS COST summary table.

4.1.2 MCOST Subroutine Arrays

AVIM (15,6): The AVIM MOS input cards are stored in this matrix where rows 1 to 15 represent MOS numbers; columns 1 to 3 contain the MOS title; and columns 4, 5, and 6 contain the average hourly wage, the average hourly overhead rate, and the average consumable cost per event, respectively.

AVUM (15,7): This array has the same format as that for the AVIM array except for an additional column 7 which contains the overtime factor.

CARDIN (8): The input card data are read into this array before they are stored in their appropriate locations.

CSTRAY (25,4): In this matrix, rows 1 to 15 represent subsystem ID numbers, and columns 1 to 4 contain various types of costs as follows:

Column	Description
1	AVUM Subsystem Maintenance Action Costs
2	AVIM Subsystem Maintenance Action Costs
3	Depot Subsystem Maintenance Action Costs
4	Condemned component and Time Change Costs

DEPOT (15,6): This array has the same format as that for the AVIM array.

EVENT (15,6): In this matrix, rows 1 to 15 represent MOS levels, and columns 1 to 6 contain various inspection costs as follows:

Column	Description
1	Pre-flight inspection cost
2	Post-flight inspection cost
3	Daily inspection cost
4	PMI inspection cost
5	PMP inspection cost
6	Total inspection cost

IVALUE (6): This array contains parameter values passed from RMS.

KNTRAY (25,6): In this matrix, rows 1 to 25 represent subsystem ID numbers, and columns 1 to 6 tally types of maintenance as follows:

Column	Description
01	AVUM on aircraft repair
02	AVUM remove/replace
03	AVUM off aircraft repairs
04	AVIM off aircraft repairs
05	Depot repairs
06	Condemned component and time change component

PART (299,9): In this matrix, rows 1 to 299 represent component ID numbers, and columns 1 to 9 contain the component input card data as follows:

Column	Description
01	Subsystem number
02	Component replacement cost
03	Salvage value
04	Transportation cost from AVUM to AVIM
05	Transportation cost from AVIM to Depot
06	Consumption cost of associated parts and materials
07	AVUM cycle time
08	AVIM cycle time
09	Depot cycle time

PCNT (5): This array is an output matrix which contains the percentages for the Subsystem Maintenance Action table.

PIPE (25): In this array, the matrix cells contain values for the subsystem pipeline costs.

PIPRAY (299,3): In this matrix, components having off aircraft repairs are tallied by component number and repair location. Rows 1 to 299 represent component ID numbers, and columns 1 to 3 represent AVUM, AVIM, and Depot maintenance, respectively. These values are used to determine pipeline inventory costs.

PTOT (6): This array contains the total inspection costs by inspection level as follows:

Row	Description
1	Pre-flight inspection cost
2	Post-flight inspection cost
3	Daily inspection cost
4	PMI inspection cost
5	PMP inspection cost
6	Total inspection cost

PTOTP (16): In this array, the matrix cells contain the numbers of inspection man-hours by AVUM MOS.

RVALU (4): In this array, the rows are set to the parameter values of IVALUE for use as floating-point numbers.

RVALUE (5): In this array, the rows are set to the parameter values of IVALUE for use as floating-point numbers.

SUBSYS (25,4): Subsystem input cards are stored in this array. Rows 1 to 25 represent subsystem ID numbers. Columns 1 to 3 contain the subsystem title, and column 4 contains the number of components per subsystem.

SUMRY (6,3): In this array, the matrix cells contain the values for the RMS Cost Summary table.

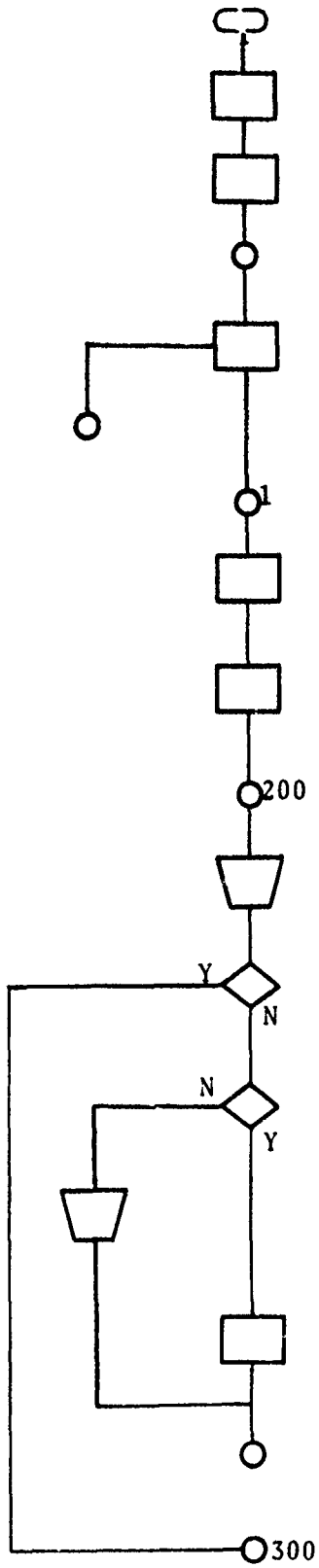
SVALUE (6): In this array, the rows are set to parameter values of IVALUE for use as floating-point numbers.

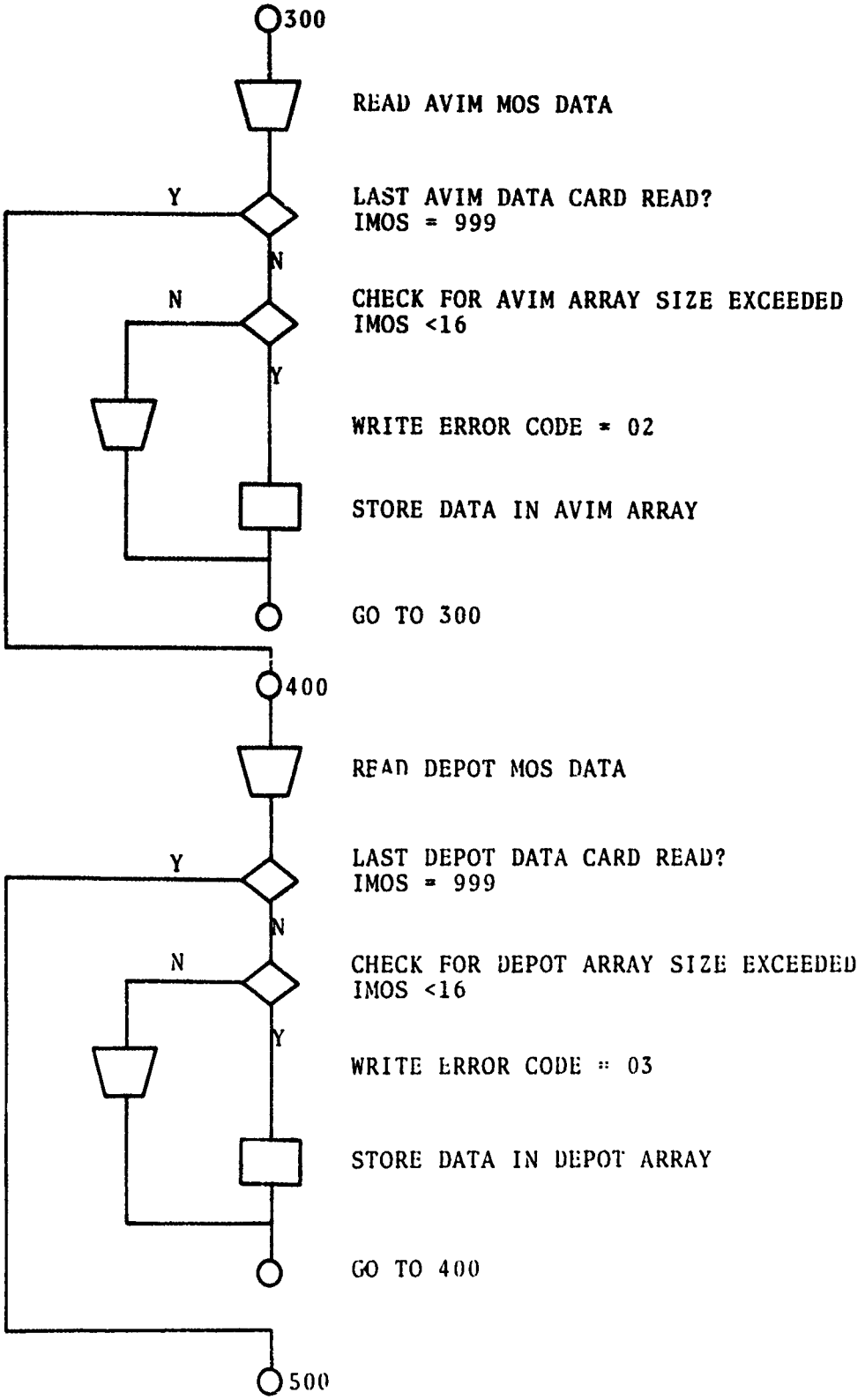
TITLE (5,6): This matrix contains the row names used in the RMS Cost Summary table.

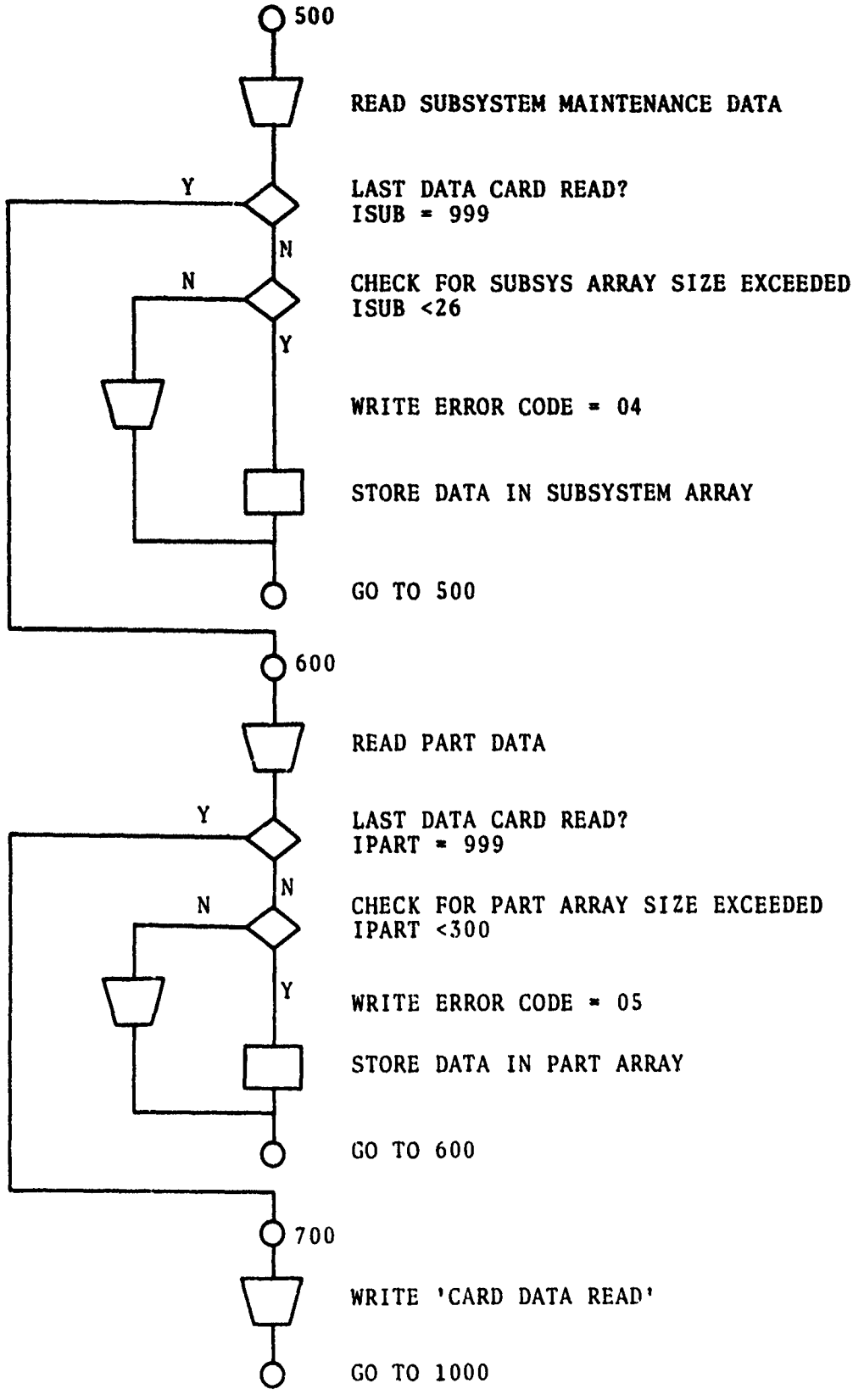
TOT (4): This array is used to accumulate the total unscheduled maintenance and inspection personnel costs.

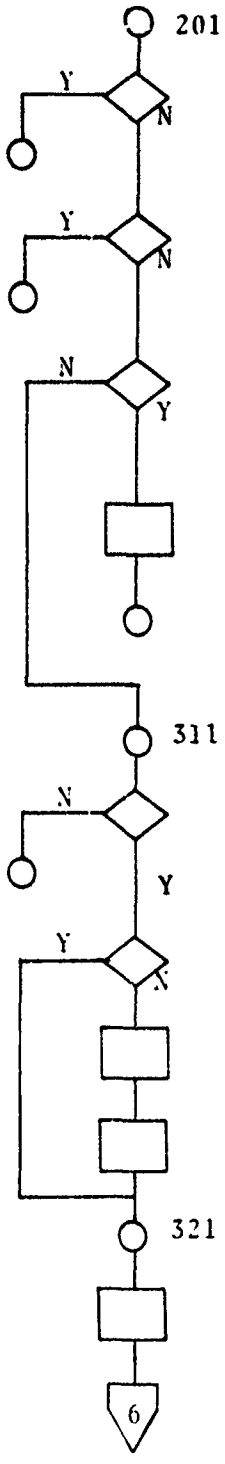
4.1.3 MCOST Logic Flow Chart

This section presents the flow chart for the MCOST logic.




300
READ AVIM MOS DATA
Y
LAST AVIM DATA CARD READ?
IMOS = 999
N
N
CHECK FOR AVIM ARRAY SIZE EXCEEDED
IMOS <16
Y
WRITE ERROR CODE = 02
STORE DATA IN AVIM ARRAY
GO TO 300
400
READ DEPOT MOS DATA
Y
LAST DEPOT DATA CARD READ?
IMOS = 999
N
N
CHECK FOR DEPOT ARRAY SIZE EXCEEDED
IMOS <16
Y
WRITE ERROR CODE = 03
STORE DATA IN DEPOT ARRAY
GO TO 400
500


500
READ SUBSYSTEM MAINTENANCE DATA
Y
LAST DATA CARD READ?
ISUB = 999
N
N
CHECK FOR SUBSYS ARRAY SIZE EXCEEDED
ISUB <26
Y
WRITE ERROR CODE = 04
STORE DATA IN SUBSYSTEM ARRAY
GO TO 500
600
READ PART DATA
Y
LAST DATA CARD READ?
IPART = 999
N
N
CHECK FOR PART ARRAY SIZE EXCEEDED
IPART <300
Y
WRITE ERROR CODE = 05
STORE DATA IN PART ARRAY
GO TO 600
700
WRITE 'CARD DATA READ'
GO TO 1000



MAINTENANCE ACTION ROUTINE

SWITCH SET FOR INSPECTION ROUTINE?
IVALUE(1) > 25

GO TO 2; INSPECTION ROUTINE

MAINTENANCE ACTION = CONDEMN?
IACT=6

GO TO 501; PART COST BY SUBSYSTEM

OVERTIME TRANSACTION? IACT=9

ADD THE ADDITIONAL OVERTIME COST TO AVUM SUBSYSTEM TOTAL

GO TO 1000

AVUM MAINTENANCE ACTION?
IACT < 3

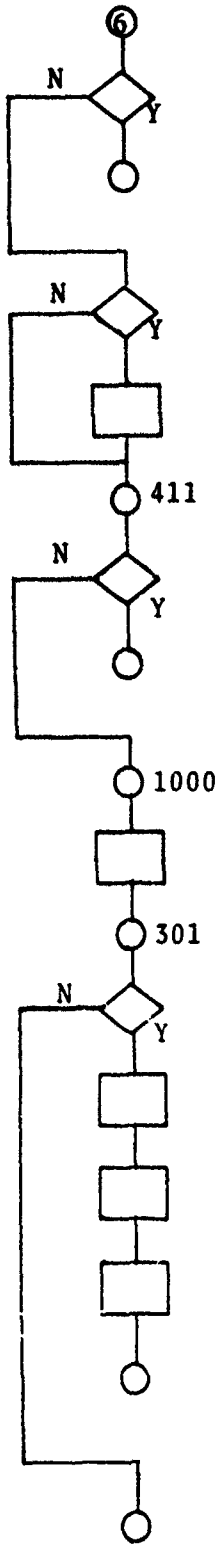
GO TO 301

CONSUMABLE COST PREVIOUSLY ACCOUNTED?
IVALUE(5)=999

COUNT MAINTENANCE ACTION BY SUBSYSTEM
KNTRAY(ISYS,IACT)=KNTRAY(ISYS,IACT) + 1

CONSUMABLE COST;CSTRAY(ISYS,1)+AVUM(MOS,6)

AVUM MANPOWER COST
CSTRAY(ISYS,1)+(AVUM(MOS,4)+AVUM(MOS,5))*RMMH



COMPONENT PREVIOUSLY ACCOUNTED?

GO TO 1000

MAINTENANCE ACTION = AVUM OFF A/C REPAIR?
IACT=3

SUM OFF A/C MAINTENANCE ACTION BY
COMPONENT AND ACTION; PIPRAY(IPRT,1)

TIME CHANGE COMPONENT?
IVALUE(5)=19

GO TO 501; COMPONENT COST BY SUBSYSTEM

RETURN TO RMS

AVIM MAINTENANCE ACTION?
IACT=4

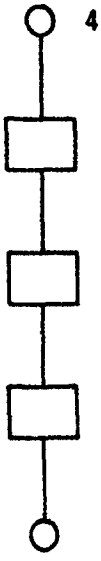
GO TO 401

COUNT AVIM MAINTENANCE EVENT BY
SUBSYSTEM; KNTRAY(ISYS,4)

AVIM SUBSYSTEM COST

SUM OFF A/C MAINTENANCE ACTION BY COMPONENT
AND ACTION; PIPRAY(IPRT,2)

GO TO 1000

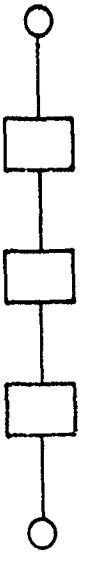


DEPOT SUBSYSTEM COST

SUM OFF A/C MAINTENANCE EVENT BY COMPONENT
AND ACTION; PIPRAY(IPRT,2)

COUNT AVIM MAINTENANCE EVENT BY
SUBSYSTEM; KNTRAY(ISYS,5)

GO TO 1000



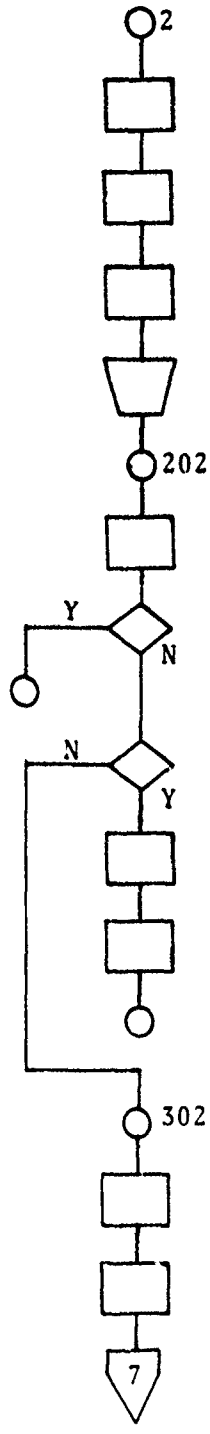
COMPONENT COST BY SUBSYSTEM
MAINTENANCE ACTION=CONDEMN OR TIME CHANGE

SUM SALVAGE VALUE BY SUBSYSTEM
CSTRAY(ISYS,4)=CSTRAY(ISYS,4)-PART(IPRT,3)

ADD NEW PART COST TO SUBSYSTEM PIPELINE COST
PIPE(ISYS)=PIPE(ISYS)+PART(IPRT,2)

COUNT MAINTENANCE ACTION BY SUBSYSTEM
KNTRAY(ISYS,6)=KNTRAY(ISYS,6)+1

GO TO 1000



INSPECTION COST ROUTINE

ISWT=3; SET BRANCH TO WRITE INSPECTION COST (202)

IRTN=1; SWITCH FOR CONSUMABLE COST CALCULATION

SET ARRAY VALUES TO ZERO

WRITE INSPECTION HEADERS

K=IVALUE(1)-100

PRINT TOTALS? K=15

GO TO 402; PRINT TOTALS

PARAMETERS PASSED FROM RMS ARE NUMBER OF EVENTS/INSPECTION? IRTN=1

COMPUTE CONSUMABLE COST/INSPECTION

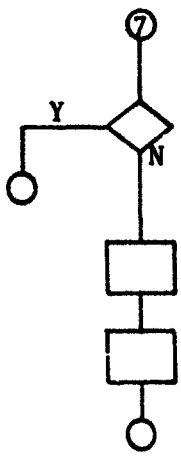
IRTN=2

GO TO 1000

COMPUTE MOS MMH COST AND ADD CONSUMABLE COST

IRTN=1

SUM THE NUMBER OF INSPECTION MAN-HOURS FOR MOS LEVEL; PTOTP(K)=PTOTP(K)+RVALUE(I)



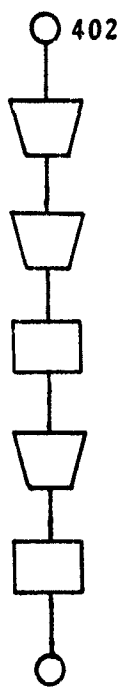
MAN-HOURS = 0; PTOTP(K)=0.0

GO TO 1000

CALCULATE THE INSPECTION COST FOR MOS LEVEL

MAXK=K

GO TO 1000



WRITE INSPECTION COSTS FOR EACH ACTIVE MOS

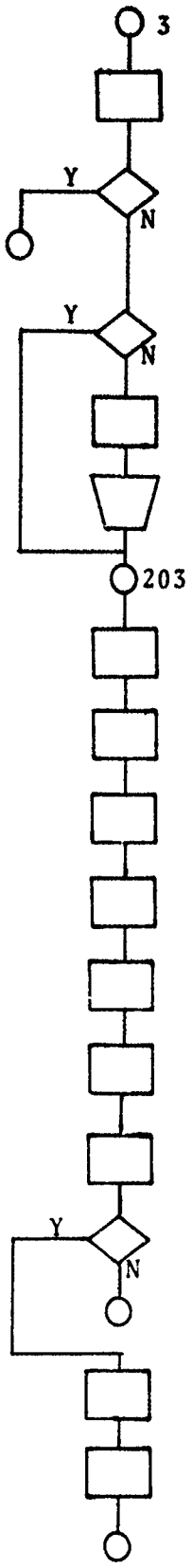
WRITE INSPECTION TOTALS

COMPUTE PERCENT OF COST FOR INSPECTION LEVEL

WRITE PERCENTAGES

ISWT=4; SET BRANCH TO MAINTENANCE REPORT (3)

GO TO 1000



MAINTENANCE REPORT

K = AVUM MOS NO.

PRINT TOTALS? K = 15

GO TO 303; PRINT TOTALS

AVUM PERSONNEL COST HEADINGS PRINTED?
KHDR ≠ 0

KHDR = 1

WRITE AVUM PERSONNEL COST HEADINGS

PARAMETERS PASSED FROM RMS IN ARRAY IVALUE

RVALU (1) = AVAILABLE MAN-HOURS; IVALUE (2)/10

RVALU (2) = NO. OF MAN-HOURS EXPENDED:
IVALUE (3)/100

RVALU (3) = OVERTIME: IVALUE (4)/100

COMPUTE THE REGULAR-DIRECT COST

COMPUTE THE COST FOR OVERTIME LABOR

COMPUTE INDIRECT COST
TOTAL MAN-HOURS AVAILABLE LESS REGULAR-DIRECT COST

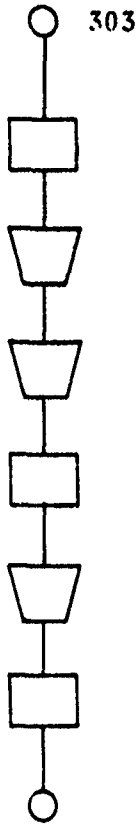
COMPUTE TOTAL COST FOR MANPOWER FOR THE MOS LEVEL
TOTAL COST > 0

GO TO 1000

ROUND THE REGULAR, OVERTIME, AND INDIRECT COSTS

ACCUMULATE COST IN EVENT(K,4) AND TOT(N)

GO TO 1000



COMPUTE EACH MOS COST AS PERCENTAGES OF TOTAL AVUM PERSONNEL COST

WRITE PERSONNEL COSTS FOR EACH MOS

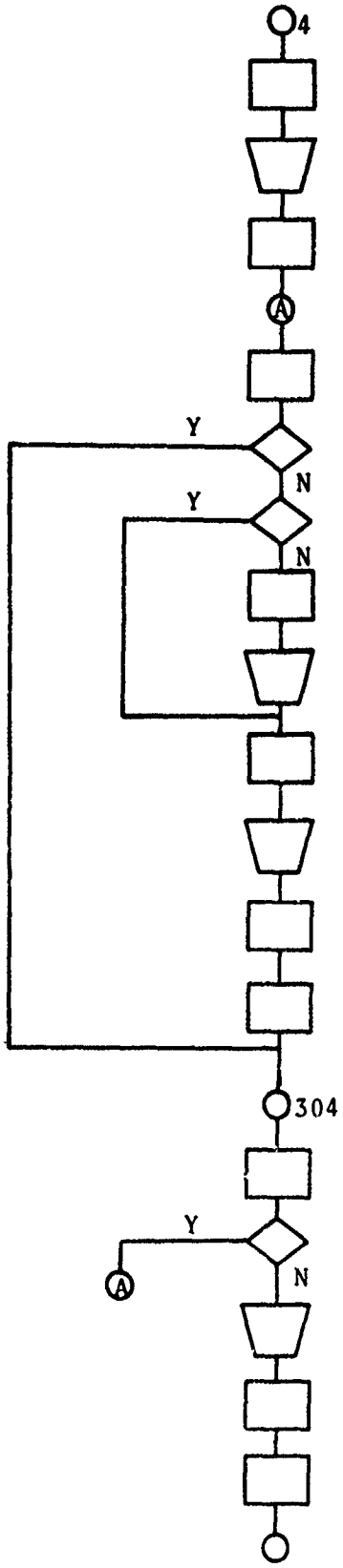
WRITE TOTAL AVUM PERSONNEL COSTS

COMPUTE PERCENT DIRECT AND INDIRECT

WRITE PERCENTAGES

ISWT = 5; SET BRANCH TO SUBSYSTEM REPORT (4)

GO TO 1000



SUBSYSTEM REPORT

COMPUTE PIPELINE COST FOR EACH SUBSYSTEM

WRITE HEADINGS

I = 1; SUBSYSTEM NO.

SUBSYSTEM COST ROUTINE

SUBSYSTEM COST=AVUM COST+AVIM COST+DEPOT COST +PIPELINE COST+(-SALVAGE VALUE)

COST < 1.0

LNCNT LE 18; LINE COUNTER

LNCNT = 0

WRITE HEADINGS

DETERMINE THE SUBSYSTEM COST AS A PERCENT OF THE TOTAL SYSTEM COST

WRITE SUBSYSTEM COST

LNCNT = LNCNT + 1

ACCUMULATE SUBSYSTEM COSTS

INCREMENT SUBSYSTEM NO.
I = I + 1

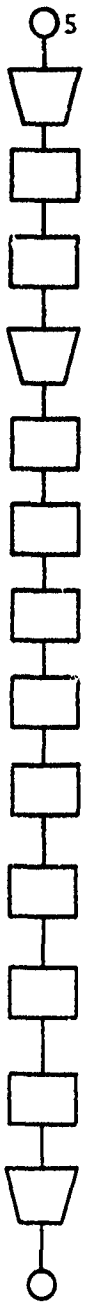
I LE NUMBER OF SUBSYSTEMS

WRITE SUBSYSTEM TOTALS

COMPUTE PERCENT OF TOTAL COST FOR EACH MAINTENANCE LEVEL

ISWT = 6; SET BRANCH TO FLIGHT HOUR REPORT (5)

GO TO 1000



COST PER FLIGHT HOUR

WRITE HEADINGS

SET ARRAY TO ZERO; SUMRY (I,J) = 0

PARAMETERS PASSED FROM RMS IN ARRAY SVALUE; FLIGHT HOURS, NO. OF FLIGHTS, % UPTIME, % MISSIONS FLOWN, % MISSIONS COMPLETED

READ DEPRECIATION COST/HR, FLIGHT COST/HR, CONSUMABLE COST/HR

DEPRECIATION COST = FLIGHT HRS*DEPRECIATION COST/HR

FLIGHT COST = (FLIGHT COST/HR. + CONSUMABLE COST/HR.)* FLIGHT HRS.

FLIGHT COST/HR = FLIGHT COST/FLIGHT HOURS

INSPECTION COST/HR = TOTAL INSPECTION COST/FLIGHT HOURS

INDIRECT COST/HR = TOTAL INDIRECT COST/ FLIGHT HOURS

MAINTENANCE COST/HR = TOTAL MAINTENANCE COST/FLIGHT HOURS

SUM COSTS FOR SUBSYSTEMS

COMPUTE PERCENTAGES

WRITE COSTS

GO TO 1000

4.1.4 MCOST Source Listing

This section presents the computer printout of the MCOST subroutine instructions.

```
      SUBROUTINE MCOST(IVALUF)
      DIMENSION IVALUF(6),KNTRAY(25,6),RVALUE(5)
      DIMENSION CARDIN(8)
      DIMENSION RVALU(4),TOT(4)
      DIMENSION AVUM(15,7),AVIM(15,6),DEPOT(15,6),PIPRAY(299,3)
      DIMENSION SUBSYS(25,4),PART(299,9)
      DIMENSION PCNT(5)
      DIMENSION SVALUE(6),SUMRY(6,3)
      DIMENSION TITL(5,6)
      DOUBLE PRECISION EVENT(15,6),PTOT(6),PTOTL
      DOUBLE PRECISION CSTRAY(25,4),PTOTP(16)
      DOUBLE PRECISION ACCUM,TOTALX,TOTCST,PIPE(25)
      EQUIVALENCE (SVALUE(1),RVALUE(5),RVALU(4))
      DATA IRTN,KHDR,ISWT/0,0,1/
      DATA TITL/120HDEPRECIATION        FLIGHT              DIRECT INSPE
     1CTION   INDIRECT PERSONNEL  MAINTENANCE         SYSTEM
     2  /
C
C*****************************************************************************
C  COST ROUTINE CONTROL SWITCH
C*****************************************************************************
C
C     ISWT = 1    INITIALIZATION AND CARD INPUT ROUTINE
C     ISWT = 201  MAINTENACE COST ROUTINE
C     ISWT = 202  INSPECTION COST ROUTINE
C     ISWT = 3    INSPECTION AND MAINTENANCE PERSONNEL COSTS (AVUM)
C     ISWT = 4    SUBSYSTEM MAINTENANCE COST ROUTINE
C     ISWT = 5    FLIGHT HOUR COSTS AND STATISTICS ROUTINE
C
      GO TO (1,201,202,3,4,5), ISWT
C
C INITIALIZE INPUT ARRAYS
C
    1 DO110I=1,15
      AVUM(I,7)=0
      DO100J=1,6
      AVIM(I,J)=0
      DEPOT(I,J)=0
  100 AVUM(I,J) = 0
  110 CONTINUE
      DO150I=1,25
      PIPE(I)=0.D0
      DO140J=1,4
  140 SUBSYS(I,J) = 0
  150 CONTINUE
      DO170I=1,299
      DO160J=1,9
  160 PART(I,J)=0
      DO151J=1,3
  151 PIPRAY(I,J)=0
  170 CONTINUE
      DO131J=1,25
      DO111K=1,6
      KNTRAY(J,K)=0
  111 CONTINUE
      DO121K=1,4
  121 CSTRAY(J,K)=0.D0
  131 CONTINUE
      ISWT=2
```

```
C
C  READ AVUM MOS DATA
C
  200 READ(5,5300)IMOS,(CARDIN(K),K=1,7)
      IF(IMOS.EQ.999)GO TO 300
      IF(IMOS.LT.16)GO TO 205
      IERR=01
      WRITE(6,3000)IERR
      GO TO 210
  205 DO210J=1,7
      AVUM(IMOS,J) = CARDIN(J)
  210 CONTINUE
      GO TO 200
C
C  READ AVIM MOS DATA
C
  300 READ(5,5000)IMOS,(CARDIN(K),K=1,6)
      IF(IMOS.EQ.999)GO TO 400
      IF(IMOS.LT.16)GO TO 305
      IERR=02
      WRITE(6,3000)IERR
      GO TO 310
  305 DO310J=1,6
      AVIM(IMOS,J) = CARDIN(J)
  310 CONTINUE
      GO TO 300
C
C  READ DEPOT DATA
C
  400 READ(5,5000)IMOS,(CARDIN(K),K=1,6)
      IF(IMOS.EQ.999)GO TO 500
      IF(IMOS.LT.16)GO TO 405
      IERR=03
      WRITE(6,3000)IERR
      GO TO 410
  405 DO410J=1,6
      DEPOT(IMOS,J)=CARDIN(J)
  410 CONTINUE
      GO TO 400
C
C  READ SUBSYSTEM MAINTENANCE CARD
C
  500 READ(5,5100)ISUB,(CARDIN(K),K=1,3),KELEM
      IF(ISUB.EQ.999)GO TO 600
      IF(ISUB.LT.26)GO TO 505
      IERR=04
      WRITE(6,3000)IERR
      GO TO 510
  505 DO510J=1,3
      SUBSYS(ISUB,J)=CARDIN(J)
  510 CONTINUE
      SUBSYS(ISUB,4)=KELEM
      NSUBSYS=ISUB
      GO TO 500
```

```
C
C  READ PART DATA
C
  600 READ(5,5200)IPART,ISYS,(CARDIN(K),K=1,8)
      IF(IPART.EQ.999)GO TO 700
      IF(IPART.LT.300)GO TO 605
      IERR=05
      WRITE(6,3000)IERR
      GO TO 610
  605 K=2
      DO610J=1,8
      PART(IPART,K)=CARDIN(J)
      K=K+1
  610 CONTINUE
      PART(IPART,1)=ISYS
      GO TO 600
  700 WRITE(6,2000)
C
C  FORMAT STATEMENTS FOR INITIALIZATION ROUTINE
C
 5000 FORMAT(I3,3A4,3F7.2)
 5100 FORMAT(I3,3A4,I5)
 5200 FORMAT(I3,I2,2F8.2,3F7.2,3F5.0)
 5300 FORMAT(I3,3A4,3F7.2,F3.1)
 2000 FORMAT(1H0,14HCARD DATA READ)
 3000 FORMAT(1H0,'ERROR CODE ',I2)
      GO TO 1000
C
C  CHECK FOR MAINTENANCE ACTION OR INSPECTION ROUTINE CALL
C
  201 IF(IVALUE(1).GT.25)GO TO 2
C
C*********************
C  MAINTENANCE ACTION ROUTINE
C*********************
C
C      KNTRAY(X,Y)    ACCUMULATES UNSCHEDULED MAINTENANCE ACTION BY SYSTEM
C      PIPRAY(X,Y)    ACCUMULATES OFF A/C MAINTENANCE ACTION BY PART
C
      ISYS=IVALUE(1)
      IPRT=IVALUE(2)
      IACT=IVALUE(4)
      IF(IACT.EQ.6)GO TO 501
      MOS=IVALUE(3)
      RMMH=IVALUE(6)
      RMMH=RMMH/100
      IF(IACT.NE.9)GO TO 311
      CSTRAY(ISYS,1)=CSTRAY(ISYS,1)+RMMHA((AVUM(MOS,7)-1.0)*AVUM(MOS,4))
      GO TO 1000
  311 IF(IACT.GT.3)GO TO 301
C
C  AVUM COST BY SUBSYSTEM
C
C  CHECK FOR SECONDARY MOS OR SPLIT SHIFT
      IF(IVALUE(5).EQ.999)GO TO 321
      KNTRAY(ISYS,IACT)=KNTRAY(ISYS,IACT)+1
      CSTRAY(ISYS,1)=CSTRAY(ISYS,1)+AVUM(MOS,6)
```

```
  321 CSTRAY(ISYS,1)=CSTRAY(ISYS,1)+(AVUM(MOS,4)+AVUM(MOS,5))*RMMH
      IF(IVALUE(5).EQ.999)GO TO 1000
      IF(IACT.NE.3)GO TO 411
      PIPRAY(IPRT,1)=PIPRAY(IPRT,1)+1
C  TIME CHANGE COMPONENTS GO TO CONDEMN ACCOUNTING
  411 IF(IVALUE(5).EQ.19)GO TO 501
 1000 RETURN
C
C  AVIM COST BY SUBSYSTEM
C
  301 IF(IACT.GT.4)GO TO 401
      KNTRAY(ISYS,4)=KNTRAY(ISYS,4)+1
      CSTRAY(ISYS,2)=CSTRAY(ISYS,2)+(AVIM(MOS,4)+AVIM(MOS,5))*RMMH+AVIM(
     2MOS,6)+PART(IPRT,4)+PART(IPRT,6)
      PIPRAY(IPRT,2)=PIPRAY(IPRT,2)+1
      GO TO 1000
C
C  DEPOT COST BY SUBSYSTEM
C
  401 CSTRAY(ISYS,3)=CSTRAY(ISYS,3)+(DEPOT(MOS,4)+DEPOT(MOS,5))*RMMH+DEP
     3OT(MOS,6)+PART(IPRT,5)+PART(IPRT,6)
      PIPRAY(IPRT,3)=PIPRAY(IPRT,3)+1
      KNTRAY(ISYS,5)=KNTRAY(ISYS,5)+1
      GO TO 1000
C
C  PART COST BY SUBSYSTEM
C
C  SALVAGE VALUE
  501 CSTRAY(ISYS,4)=CSTRAY(ISYS,4)+PART(IPRT,3)
C  NEW PART COST -- PIPELINE REPLACEMENT PART COST
      PIPE(ISYS)=PIPE(ISYS)+PART(IPRT,2)
      KNTRAY(ISYS,6)=KNTRAY(ISYS,6)+1
      GO TO 1000
C**********************
C  INSPECTION COST ROUTINE
C**********************
C
C     PTOTP(X)       ACCUMULATES THE NO. OF INSPECTION HOURS BY MOS LEVEL
C
C  CHECK FOR INITIALIZATION AND HEADER PRINT
C
    2 CONTINUE
      IRTN=1
      ISWT=3
      DO102I=1,16
  102 PTOTP(I)=0.D0
      DO132J=1,6
      PTOT(J)=0.D0
      DO122K=1,15
  122 EVENT(K,J)=0.D0
  132 CONTINUE
      MAXK=0
```

```
C
C  WRITE INSPECTION HEADERS
C
      WRITE(6,1100)
      WRITE(6,1110)
      WRITE(6,1200)
      WRITE(6,1205)
C
C  MOS 15 IS CURRENTLY USED FOR TOTAL NO. OF EVENTS PER INSPECTION LEVEL
C
  202 K=IVALUF(1)-100
      IF(K.EQ.15)GO TO 402
      IF(IRTN.EQ.2)GO TO 302
C
C  CONSUMABLE COSTS DURING INSPECTION
C     IVALUE(1) = AVUM MOS LEVEL        **  IVALUF(4) = NO. OF PMD
C     IVALUE(2) = NO. OF PREFLIGHTS     **  IVALUF(5) = NO. OF PMI
C     IVALUE(3) = NO. OF POST FLIGHTS   **  IVALUE(6) = NO. OF PMP
C
      IRTN=2
      M=2
      DO222J=1,5
      EVENT(K,J)=AVUM(K,6)*IVALUE(M)
      M=M+1
  222 CONTINUE
      GO TO 1000
C
C  COMPUTE MMH COST AND ADD CONSUMABLE COST
C     IVALUF(1) = AVUM MOS LEVEL        **  IVALUE(4) = PMD HOURS
C     IVALUE(2) = PREFLIGHT HOURS       **  IVALUE(5) = PMI HOURS
C     IVALUE(3) = POST FLIGHT HOURS     **  IVALUE(6) = PMP HOURS
C
  302 M=1
      IRTN=1
      DO322I=2,6
      RVALUE(M)=IVALUF(I)
      RVALUE(M)=RVALUF(M)/100.0
      M=M+1
  322 CONTINUE
C
C  SUM NO. OF INSPEC MANHOURS BY MOS LEVEL
C
      DO332I=1,5
      PTOTP(K)=PTOTP(K)+RVALUF(I)
  332 CONTINUE
      IF(PTOTP(K).EQ.0)GO TO 1000
      DO342J=1,5
      FVENT(K,J)=RVALUE(J)*(AVUM(K,4)+AVUM(K,5))+EVENT(K,J)
      IROUND=EVENT(K,J)+0.5
      EVENT(K,J)=IROUND
      EVENT(K,6)=EVENT(K,6)+FVENT(K,J)
```

```
C
C  SUM INSPECTION COST BY INSPECTION LEVEL
C
      PTOT(J)=PTOT(J)+EVENT(K,J)
  342 CONTINUE
      PTOT(6)=PTOT(6)+EVENT(K,6)
      MAXK=K
      GO TO 1000
  402 DO412K=1,MAXK
      IF(EVENT(K,6).EQ.0.D0)GO TO 412
      PERCNT=(EVENT(K,6)/PTOT(6))*100.
      WRITE(6,1300)(AVUM(K,J),J=1,3),(EVENT(K,M),M=1,6),PERCNT
  412 CONTINUE
      WRITE(6,2450)
      WRITE(6,1205)
      WRITE(6,1400)(PTOT(I),I=1,6)
      PTOTL=0.D0
      DO422I=1,5
      PTOT(I)=(PTOT(I)/PTOT(6))*100
      PTOTL=PTOT(I)+PTOTL
  422 CONTINUE
C
      WRITE(6,2450)
      WRITE(6,1205)
      WRITE(6,1500)(PTOT(I),I=1,5),PTOTL
      TOTINS=PTOT(6)
      ISWT=4
      DO432K=1,15
  432 EVENT(K,4)=0.D0
      MAXK=0
      GO TO 1000
C
C  FORMATS FOR INSPECTION COST ROUTINE
C
 1105 FORMAT(1H1)
 1100 FORMAT(1H1,56X,19HRMS INSPECTION COST)
 1110 FORMAT(49X,35H=====================================)
 1200 FORMAT(1H0,14X,9HMOS LEVEL,7X,22HPREFLIGHT  POST FLIGHT,8X,19HDAIL
     2Y  INTERMEDIATE,5X,8HPERIODIC,8X,5HTOTAL,10H   PERCENT)
 1205 FORMAT(15X,101H=====================================================
     9=============================================)
 1300 FORMAT(1H0,14X,3A4,3(2X,F11.0),3X,3(F11.0,2X),2X,F6.2)
 1400 FORMAT(1H0,14X,5HTOTAL,7X,3(2X,F11.0),3X,3(F11.0,2X),'  100.00')
 1500 FORMAT(1H0,10X,16HPERCENT OF TOTAL,3(7X,F6.2),8X,F6.2,7X,F6.2,7X,F
     36.2)
 2450 FORMAT(1H0)
C
C**********************
C MAINTENANCE REPORT
C**********************
C
C  ROUTINE TO DETERMINE PERSONNEL COSTS FOR THE AVUM MOS LEVELS
C      IVALUE(1) = MOS LEVEL
C      IVALUE(2) = AVAILABLE MANHOURS
C      IVALUE(3) = NO. OF MANHOURS EXPENDED
C      IVALUE(4) = OVERTIME IN .01 HOURS
```

```
C
    3 K=IVALUE(1)
      IF(K.EQ.15)GO TO 303
      IF(KHDR.NE.0)GO TO 203
      KHDR=1
      DO103J=1,4
      TOT(J)=0
  103 CONTINUE
C
C  WRITE PERSONNEL HEADINGS
C
      WRITE(6,2003)
      WRITE(6,2050)
      WRITE(6,2100)
      WRITE(6,2200)
      WRITE(6,2300)
  203 RVALU(1)=IVALUE(2)
      RVALU(2)=IVALUE(3)
      RVALU(3)=IVALUE(4)
      RVALU(1)=RVALU(1)/10
      RVALU(2)=RVALU(2)/100
      RVALU(3)=RVALU(3)/100
C
C  PERSONNEL COST = UNSCHEDULED MAINT. + INSP + OT
C
      RATE=AVUM(K,4)
      REGTM=RVALU(2)-RVALU(3)+PTOTP(K)
      REGCST=REGTM*RATE
      OVERTM=RVALU(3)*(RATE*AVUM(K,7))
      TOTHRS=RVALU(1)*RATE
      CINDCT=TOTHRS-REGCST
      IF(TOTHRS.LE.0.0)GO TO 1000
C
C  WRITE
C
      IROUND = REGCST + 0.5
      EVENT(K,1)=IROUND
      IROUND = OVERTM + 0.5
      EVENT(K,2)=IROUND
      IROUND = CINDCT + 0.5
      EVENT(K,3)=IROUND
      EVENT(K,4)=EVENT(K,1)+EVENT(K,2)+EVENT(K,3)
      DO213N=1,4
  213 TOT(N)=TOT(N)+EVENT(K,N)
      MAXK=K
      GO TO 1000
C
C  WRITE TOTALS, CALCULATE PERCENTAGES AND PRINT
C
  303 DO313K=1,MAXK
      IF(EVENT(K,4).EQ.0.00)GO TO 313
      PERCNT=(EVENT(K,4)/TOT(4))*100
      WRITE(6,2400)(AVUM(K,J),J=1,3),(EVENT(K,M),M=1,4),PERCNT
  313 CONTINUE
      WRITE(6,2450)
      WRITE(6,2050)
      WRITE(6,2500)(TOT(I),I=1,4)
      TOTIND=TOT(3)
```

```
C
      DO323I=1,3
      TOT(I)=(TOT(I)/TOT(4))*100
  323 CONTINUE
      TOT(4)=TOT(1)+TOT(2)+TOT(3)
      WRITE(6,2450)
      WRITE(6,2050)
      WRITE(6,2600)
      WRITE(6,2700)(TOT(I),I=1,4)
      ISWT=5
      GO TO 1000
C
C  FORMATS FOR AVUM MOS PERSONNEL COST
C
 2003 FORMAT(1H1,38X,54HINSPECTION AND UNSCHEDULED MAINTENANCE PERSONNEL
     4 COSTS)
 2050 FORMAT(24X,81H----------------------------------------------------
     7----------------------------)
 2100 FORMAT(1H0,24X,3HMOS,15X,22H------ DIRECT --------,7X,8HINDIRECT,1
     50X,5HTOTAL,10H   PERCENT)
 2200 FORMAT(24X,5HLEVEL,14X,7HREGULAR,7X,8HOVERTIME)
 2300 FORMAT(1H )
 2400 FORMAT(1H0,23X,3A4,4(4X,F11.0),3X,F6.2)
 2500 FORMAT(1H0,23X,5HTOTAL,7X,4(4X,F11.0),'   100.00')
 2600 FORMAT(1H0,23X,10HPERCENT OF)
 2700 FORMAT(24X,5HTOTAL,16X,4(F6.2,9X))
C**********************
C SUBSYSTEM REPORT
C**********************
C
C  IVALUE IS A DUMMY ARRAY
C
C
C  COMPUTE PIPELINE COST
C
    4 SIMHRS=IVALUE(1)/10
      ICNT=0
      KNTSUB=0
      NOSRT=1
      DO84I=1,NOSYS
      NOSRT=NOSRT+ICNT
      ICNT=SUBSYS(I,4)
      IF(ICNT.EQ.0)GO TO 84
      KNTSUB=KNTSUB+ICNT
      PLN=0
      DO64NK=NOSRT,KNTSUB
      PLN=PIPRAY(NK,1)*(PART(NK,7)/SIMHRS)
      PLN=PIPRAY(NK,2)*(PART(NK,8)/SIMHRS)+PLN
      PLN=PIPRAY(NK,3)*(PART(NK,9)/SIMHRS)+PLN
      PLN = PLN + 0.5
      IPLN = PLN
      PLN = IPLN
   54 PIPE(I)=PIPE(I)+(PLN*PART(NK,2))
      PLN=0
```

```
   64 CONTINUE
   84 CONTINUE
      TOTCST=0.DO
      DO154I=1,NOSYS
      IROUND=CSTRAY(I,4) + 0.5
      CSTRAY(I,4) = =IROUND
      DO104J=1,3
      IROUND=CSTRAY(I,J) + 0.5
      CSTRAY(I,J)=IROUND
  104 TOTCST=TOTCST+CSTRAY(I,J)
      IROUND=PIPE(I) + 0.5
      PIPE(I)=IROUND
      TOTCST=TOTCST+PIPE(I)+CSTRAY(I,4)
  154 CONTINUE
C
C  WRITE HEADER
C
      WRITE(6,1040)
      WRITE(6,1001)
      WRITE(6,1002)
      WRITE(6,1003)
      WRITE(6,1004)
      WRITE(6,1045)
      WRITE(6,1006)
      LNCNT=0
C
C  PRINT SUBSYSTEM MAINTENANCE COST
C
      DO304I=1,NOSYS
      ACCUM=0.DO
      DO214J=1,4
      ACCUM=ACCUM+CSTRAY(I,J)
  214 CONTINUE
      ACCUM=ACCUM+PIPE(I)
      IF(ACCUM.LT.1.0)GO TO 304
      IF(LNCNT.LE.18)GO TO 224
      LNCNT=0
      WRITE(6,1040)
      WRITE(6,1001)
      WRITE(6,1002)
      WRITE(6,1003)
      WRITE(6,1004)
      WRITE(6,1045)
      WRITE(6,1006)
  224 PERCNT=(ACCUM/TOTCST)*100
      WRITE(6,2040)(SUBSYS(I,J),J=1,3),(KNTRAY(I,K),K=1,3),CSTRAY(I,1),K
     9NTRAY(I,4),CSTRAY(I,2),KNTRAY(I,5),CSTRAY(I,3),KNTRAY(I,6),CSTRAY(
     *I,4),PIPE(I),ACCUM,PERCNT
      LNCNT=LNCNT+1
      IF(I.EQ.1)GO TO 304
```

```
C
C  ACCUMULATE MAINTENANCE TOTALS IN SYSRAY(I,M) AND CSTRAY(I,N)
C
      DO234M=1,6
  234 KNTRAY(1,M)=KNTRAY(1,M)+KNTRAY(I,M)
      DO244N=1,4
  244 CSTRAY(1,N)=CSTRAY(1,N)+CSTRAY(I,N)
      PIPE(1)=PIPE(1)+PIPF(I)
  304 CONTINUE
C
C  PRINT TOTALS
C
      WRITE(6,1006)
      WRITE(6,2001)(KNTRAY(1,K),K=1,3),CSTRAY(1,1),KNTRAY(1,4),CSTRAY(1,
     *2),KNTRAY(1,5),CSTRAY(1,3),KNTRAY(1,6),CSTRAY(1,4),PIPF(1),TOTCST
      WRITE(6,1007)
      TOTMNT=TOTCST
      ISWT=6
      WRITE(6,1006)
      IF(TOTCST.LE.0.00)GO TO 1000
  314 WRITE(6,2043)
      PCNT(5)=0.0
      DO354I=1,3
      PCNT(I)=(CSTRAY(1,I)/TOTCST)*100
      PCNT(5)=PCNT(5)+PCNT(I)
  354 CONTINUE
      PIPE(1)=PIPE(1)+CSTRAY(1,4)
      PCNT(4)=(PIPE(1)/TOTCST)*100
      PCNT(5)=PCNT(5)+PCNT(4)
      WRITE(6,2004)(PCNT(I),I=1,5)
      GO TO 1000
C
C  FORMATS FOR SUBSYSTEM MAINTENANCE COSTS
C
 1040 FORMAT(1H1,52X,28HSUBSYSTEM MAINTENANCE ACTION)
 1001 FORMAT(50X,34H==================================)
 1002 FORMAT(1H0,30X,4HAVUM,25X,4HAVIM,13X,5HDEPOT,18X,4HPART)
 1003 FORMAT(14X,100H==========  ==========  ==========  ==========
     1=====  ==========  ==========)
 1004 FORMAT(14X,25HNO. OF    NO. OF   NO. OF,67X,8HPIPELINE,/,14X,28HON
     2-EQUIP  REMOVE   OFF-EQUIP,4X,5HTOTAL,3X,6HNO. OF,4X,14HTOTAL   NO
     3. OF,4X,49HTOTAL   NO. OF  SALVAGE REPL.      TOTAL  PERCENT)
 1045 FORMAT(1X,9HSUBSYSTEM,4X,26HREPAIRS   REPLACE  REPAIRS,6X,86HCOST
     5   REPAIRS   COST    REPAIRS   COST    CONDEMN VALUE   COST
     6COST   OF TOTAL)
 1006 FORMAT(1X,132H==========  ==========  ==========  ==========
     7==========  ==========  ==========  ==========  ==========
     8==========)
 2040 FORMAT(1H0,3A4,3X,I5,5X,I5,6X,3(I5,3X,F7.0,3X),I5,2X,F7.0,2X,F8.0,
     91X,F8.0,2X,F6.2)
 2001 FORMAT('H0,5HTOTAL,10X,I5,5X,I5,6X,3(I5,3X,F7.0,3X),I5,2X,F7.0,2X,
     *F8.0,1X,F8.0,'  100.00')
 1007 FORMAT(1H0)
 2043 FORMAT(1X,10HPERCENT OF)
 2004 FORMAT(1X,5HTOTAL,40X,3(F6.2,12X),8X,F6.2,3X,F6.2)
```

```
C
C**********************
C FLIGHT HOUR REPORT
C**********************
C
C  PRINT HEADERS
C
    5 WRITE(6,1060)
      WRITE(6,1061)
      WRITE(6,1062)
      WRITE(6,1063)
C
C  INITIALIZATION
C
      DO156I=1,6
      DO106J=1,3
  106 SUMRY(I,J)=0
      SVALUE(I)=IVALUE(I)
  156 CONTINUE
C
C READ FLIGHT CARD:  DEPRECIATION COST/HR
C                    FLIGHT COST/HR
C                    CONSUMABLE COST/FLIGHT
C
      READ(5,3060)DRATE,FRATE,CRATE
      SVALUE(1)=SVALUE(1)/10
      SVALUE(3)=SVALUE(3)/10
      DO206I=4,6
      SVALUE(I)=SVALUE(I)/100
  206 CONTINUE
C
C  COMPUTE FLIGHT HOUR AND TOTAL COSTS
C
      SUMRY(1,1)=DRATE
      SUMRY(1,2)=SVALUE(1)*DRATE
      SUMRY(2,2)=FRATE*SVALUE(1)+CRATE*SVALUE(1)
      SUMRY(2,1)=SUMRY(2,2)/SVALUE(1)
      SUMRY(3,1)=TOTINS/SVALUE(1)
      SUMRY(3,2)=TOTINS
      SUMRY(4,1)=TOTIND/SVALUE(1)
      SUMRY(4,2)=TOTIND
      SUMRY(5,1)=TOTMNT/SVALUE(1)
      SUMRY(5,2)=TOTMNT
      DO256I=1,5
      SUMRY(6,2)=SUMRY(6,2)+SUMRY(I,2)
      SUMRY(6,1)=SUMRY(6,1)+SUMRY(I,1)
  256 CONTINUE
C
C  PERCENTAGES
C
      DO306I=1,6
      SUMRY(I,3)=(SUMRY(I,2)/SUMRY(6,2))*100
  306 CONTINUE
```

```
C
C  PRINT COSTS
C
      DO356I=1,5
      WRITE(6,2060)(TITL(K,I),K=1,5),(SUMRY(I,J),J=1,3)
  356 CONTINUE
      WRITE(6,1063)
      WRITE(6,2060)(TITL(K,6),K=1,5),(SUMRY(6,J),J=1,3)
      WRITE(6,1064)
      SVALUE(3)=SVALUE(3)/24
      WRITE(6,2061)SVALUE(3)
      WRITE(6,2062)SVALUE(1)
      WRITE(6,2063)SVALUE(4)
      WRITE(6,2064)SVALUE(5)
      WRITE(6,2065)SVALUE(6)
      WRITE(6,1064)
      GO TO 1000
C
C  FORMATS FOR FLIGHT HOUR COSTS AND STATISTICS
C
 1060 FORMAT(1H1,56X,16HRMS COST SUMMARY)
 1061 FORMAT(53X,25H-------------------------)
 1062 FORMAT(1H0,55X,39HCOST/FLIGHT HOUR   TOTAL COST   PERCENT)
 1063 FORMAT(55X,41H---------------- ------------ ----------)
 1064 FORMAT(1H0,35X,60H------------------------------------------------------------
     1------------)
 3060 FORMAT(F7.2,2(F5.2))
 2060 FORMAT(1H0,36X,5A4,5X,F7.2,7X,F9.0,4X,F6.2)
 2061 FORMAT(1H0,45X,'TOTAL SIMULATION TIME (DAYS)',7X,F6.1)
 2062 FORMAT(1H0,45X,'TOTAL FLIGHT TIME (HRS)',11X,F7.1)
 2063 FORMAT(1H0,45X,'UPTIME/TOTAL TIME',18X,F6.2)
 2064 FORMAT(1H0,45X,'MISSIONS FLOWN/MISSIONS CALLED',5X,F6.2)
 2065 FORMAT(1H0,45X,'MISSIONS COMPLETED/MISSIONS FLOWN  ',F6.2)
      END
```

4.2 SHFTHR Subroutine

4.2.1 SHFTHR Subroutine Description

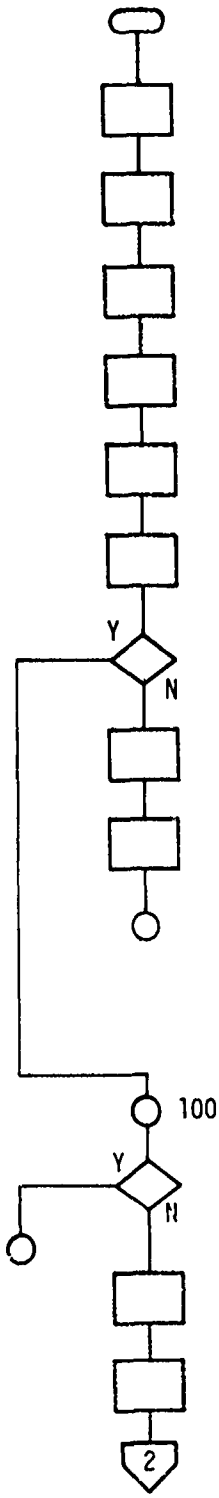
The SHFTHR subroutine is called for from the Data Compilation routine to compute the total number of hours available in each shift during the simulation period.

The HELPB block is used to interface the RMS COST model with the SHFTHR subroutine. HELPB provides two-way communications via the fullword Savevalues. The parameters passed to the subroutine are the number of work days per week, number of hours the first shift is available during one day, number of hours the second shift is available during one day, the offset from the start of the work day, and the simulation interval. When the SHFTHR subroutine returns control to RMS, the second and third parameters of the passed transactions contain the total available working hours for the first and the second shift, respectively. These values are then passed to the Maintenance Report routines of the MCOST subroutine to be used in the computation of the indirect personnel cost.

Since the subroutine SHFTHR is called for once, it is made core resident only during this time.

4.2.2 SHFTHR Logic Flow Chart

This section presents the flow chart for the SHFTHR logic.



SUBROUTINE SHFTHR (I1,I2,I3,I4,I5)

NO. OF DAYS IN SIMULATION; SIMHRS=I5
STIME=SIMHRS/240

INTEGER NO. OF DAYS; IDAY = STIME

RDAY = IDAY

PARTIAL DAY: SHRS = STIME - RDAY

NO. OF WEEKS IN SIMULATION: IWKS = IDAY/7

PARTIAL WEEK; IDAY = IDAY - (IWKS *7)

IDAY = 0 or IDAY < WKD?
(WKD IS NUMBER OF WORKING DAYS/WEEK)

IDAY = WKD

SHRS = 0.0

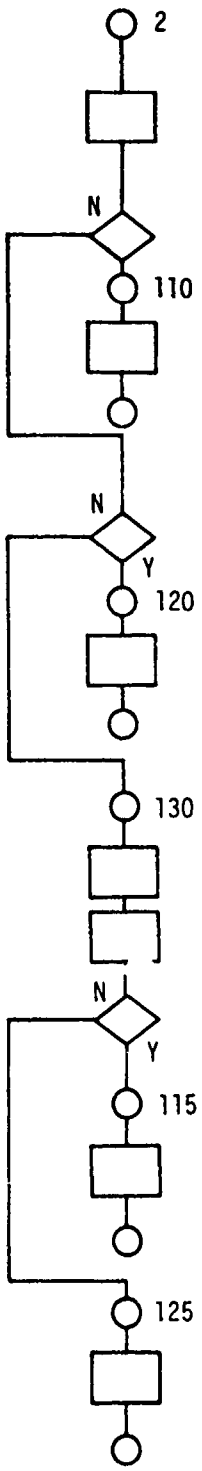
GO TO 150

SHRS = 0.0?

GO TO 150

SHRS = SHRS *24.0

SHRS = SHRS - OFFSET



REM1 = SHRS - SHFT1

REM1 < 0;

S1 = SHRS; PARTIAL HOURS ARE WORKED ON FIRST SHIFT

GO TO 150

REM1 = 0

S1 = SHFT1; PARTIAL HOURS = LENGTH OF FIRST SHIFT

GO TO 150

S1 = SHFT1

REM2 = REM1 - SHFT2

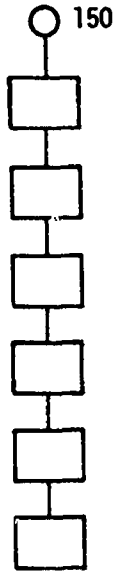
REM2 < 0

S2 = REM1; PARTIAL HOURS ON SECOND SHIFT

GO TO 150

S2 = SHFT2; PARTIAL HOURS = LENGTH OF SECOND SHIFT

GO TO 150



WRKDYS = (IWKS *WKD) + IDAY

SHFT1 = (WRKDYS *SHFT1) + S1

SHFT1 = (WRKDYS *SHFT2) + S2

I2 = SHFT1 *10

I3 = SHFT2 *10

RETURN TO RMS

4.2.3 SHFTHR Source Listing

This section presents the computer printout of the SHFTHR subroutine instructions.

```
      SUBROUTINE SHFTHR(I1,I2,I3,I4,I5)
C
C  CALCULATES THE NUMBER OF AVAILABLE AVUM WORKING HOURS.
C
      WKD=I1
      SHFT1=I2
      SHFT2=I3
      OFFSET=I4
      SIMHRS=I5
C
      SHFT1=SHFT1/10.
      SHFT2=SHFT2/10.
      OFFSET=(OFFSET+2.)/10.
      S1=0.
      S2=0.
      STIME=SIMHRS/240.
      IDAY=STIME
      RDAY=IDAY
      SHRS=STIME-RDAY
      IWKS=IDAY/7
      IDAY=IDAY-(IWKS*7)
      IF((IDAY.EQ.0).OR.(IDAY.LT.WKD))GO TO 100
      IDAY=WKD
      SHRS=0.0
      GO TO 150
  100 IF(SHRS.EQ.0.0)GO TO 150
      SHRS=SHRS*24.0
      SHRS=SHRS-OFFSET
      REM1=SHRS-SHFT1
      IF(REM1)110,120,130
  110 S1=SHRS
      GO TO 150
  120 S1=SHFT1
      GO TO 150
  130 S1=SHFT1
      REM2=REM1-SHFT2
      IF(REM2)115,125,125
  115 S2=REM1
      GO TO 150
  125 S2=SHFT2
  150 WRKDYS=(IWKS*WKD)+IDAY
      SHFT1=(WRKDYS*SHFT1)+S1
      SHFT2=(WRKDYS*SHFT2)+S2
      I2=SHFT1*10
      I3=SHFT2*10
      RETURN
      END
```

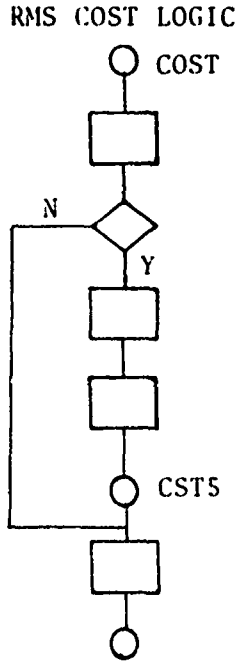
5. RELIABILITY AND MAINTAINABILITY SIMULATOR (RMS) WITH COST LOGIC

5.1 Introduction

The Reliability and Maintainability Simulator (RMS) with COST logic, referred to as the RMS COST model, was executed with various alternatives which are documented in the final technical report, USAAVSCOM TR 75-27, for the current contractual effort. The failure rates and a base manpower loading for the OH-58 were simulated for a 6-month operational period in an on-site demonstration at the AVSCOM Product Assurance Directorate.

The following sections present the flow chart for the RMS COST logic, a complete listing of the RMS COST model program, and the four cost-information tables generated by this program. The flow chart shows the modifications made to the basic RMS. Each modification in the RMS code to incorporate the COST logic is indicated in the RMS COST model program listing by a successive encircled number which is annotated accordingly.

5.2 RMS COST Logic Flow Chart



GENERATE 1,,,1,126

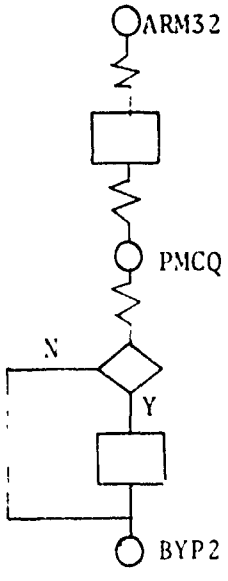
DETERMINE RMS COST? X1630 = 0

LOAD SUBROUTINE MCOST

HELPA MCOST; CALL MCOST TO INITIALIZE COST VARIABLES AND READ COST DATA CARDS

TERMINATE

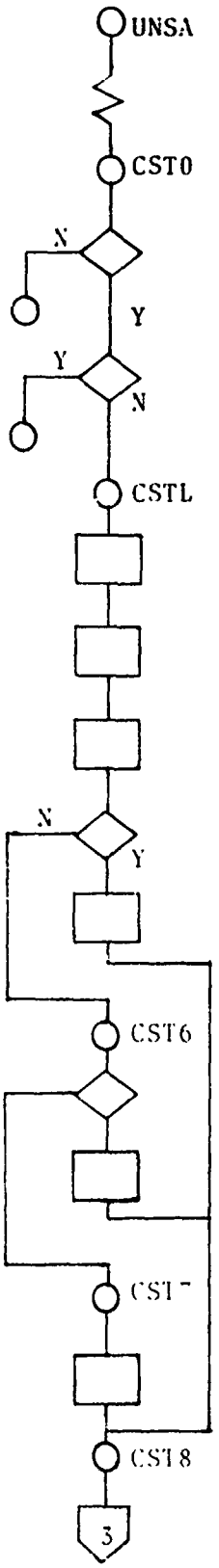
MISSION GENERATION ROUTINE



ACCUMULATE THE NUMBER OF PREFLIGHTS, POSTFLIGHTS OR DAILY INSPECTIONS IN HALFWORD MATRIX 7

PMI OR PMP INSPECTION CONTINUED FROM PREVIOUS SHIFT? P26 = 0

ACCUMULATE THE NUMBER OF PMI'S AND PMP'S IN HALFWORD MATRIX 7



UNSCHEDULED MAINTENANCE ROUTINE

COST LOGIC FOR AVUM REMOVE AND REPLACE AND AVUM REPAIR

DETERMINE RMS COST? X1630=0

GO TO CSTX

UNSCHEDULED MAINTENANCE MANHOURS = 0?

GO TO CSTX

X1601=V46; SUBSYSTEM NØ.

X1602=FN46; COMPONENT NØ.

X1603=P2; MØS NØ.

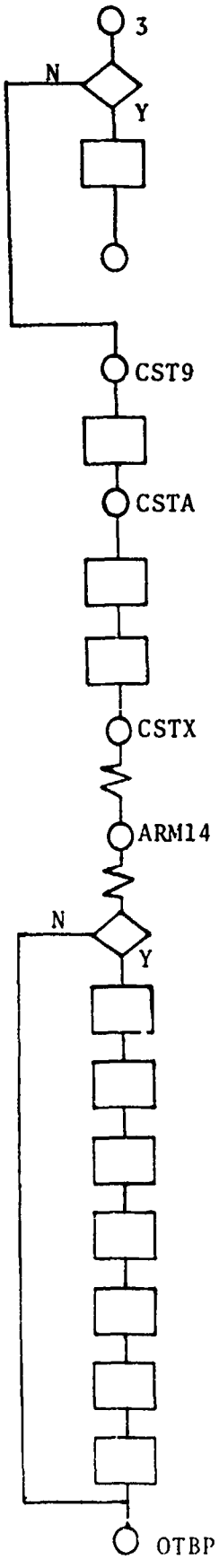
OFF A/C REPAIR? P17=18

X1604=3; MAINTENANCE ACTION CODE FOR OFF A/C REPAIR

REMOVE AND REPLACE ACTION? P25=1359;

X1604=2 ; MAINTENANCE ACTION CODE FOR REMOVE AND REPLACE

X1604=1; MAINTENANCE ACTION CODE FOR ON A/C REPAIR



PREVIOUSLY COUNTED EVENT? BV10=1

X1605=999; SWITCH TO SUPPRESS EVENT COUNTER

GO TO CSTA

X1605=P17; P17=19 FOR TIME CHANGE ACTION

X1606=V36; MAINTENANCE MANHOURS

HELPA MCOST,X1601,X1602,X1603,X1604,X1605,X1606

OVERTIME LOGIC

DETERMINE RMS COST? X1630=0

X1601=V46; SUBSYSTEM NØ.

X1602=FN46; COMPONENT NØ.

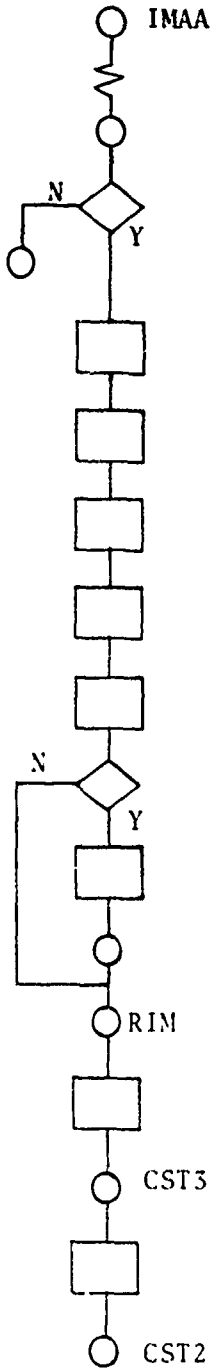
X1603=P2; MØS NØ.

X1604=K9; OVERTIME ACTION CODE

X1605=KO

X1606=V244; OVERTIME MAINTENANCE MANHOURS

HELPA MCOST, X1601,X1602,X1603,X1604,X1605,X1606



THREE LEVEL MAINTENANCE--AVUM,AVIM,DEPOT

COST ROUTINE FOR AVIM REPAIR,CODE=04;
DEPOT REPAIR,CODE=05

DETERMINE RMS COST? X1630=0

GO TO CST2

X1601=V46; SUBSYSTEM NO.

X1602=FN46; COMPONENT NO.

X1603=P28; MOS NØ.

X1605=0

X1606=V70; MAINTENANCE MANHOURS

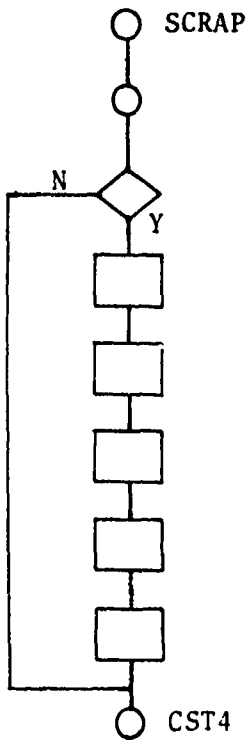
DEPOT REPAIR: P6≠8

X1604=5; MAINTENANCE ACTION CODE FOR DEPOT

GO TO CST3

X1604=4; MAINTENANCE ACTION CODE FOR AVIM

HELPA MCOST, X1601,X1602,X1603,X1604,X1605,X1606
DETERMINE COST FOR MAINTENANCE ACTION



COST ROUTINE FOR CONDEMNED COMPONENTS
CODE=6

DETERMINE RMS COST? X1630=0

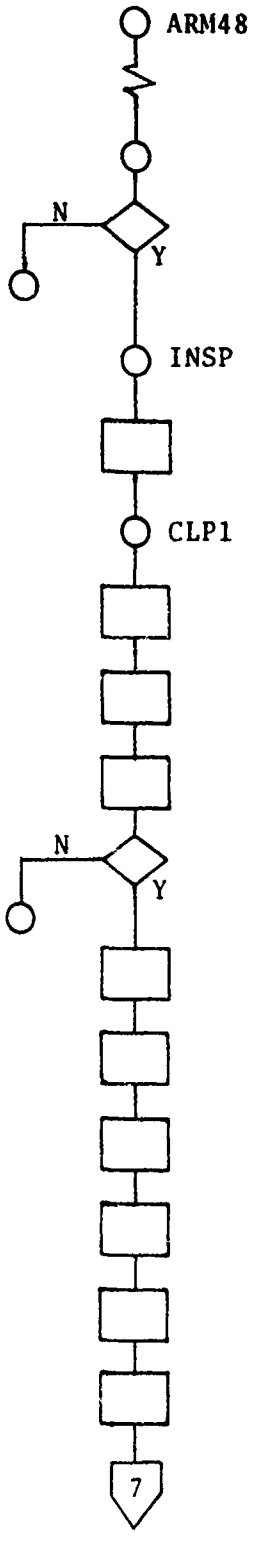
X1601=V46; SUBSYSTEM NO.

X1602=FN46; COMPONENT NO.

X1604=6; MAINTENANCE ACTION CODE FOR CONDEMN

X1605=0

HELPA MCOST,X1601,X1602,X1603,X1604,X1605,X1606
DETERMINE COST FOR MAINTENANCE ACTION



DATA COMPILATION ROUTINE

LOGIC TO CALL COST SUBROUTINES

DETERMINE RMS COST? X1630=0

GO TO BRCH

INSPECTION COST CALCULATION ROUTINE

P2=0; MOS LEVEL = 0

P2=P2+1; INCREMENT MOS LEVEL

X1601=P2; MOS NO.

X1601=X1601+100; FLAGS AS INSPECTION MOS

P2 < 15; MOS INSPECTION VALUES

GO TO CALL

X1602=NØ. OF PREFLIGHTS INSPECTIONS AT THE MOS

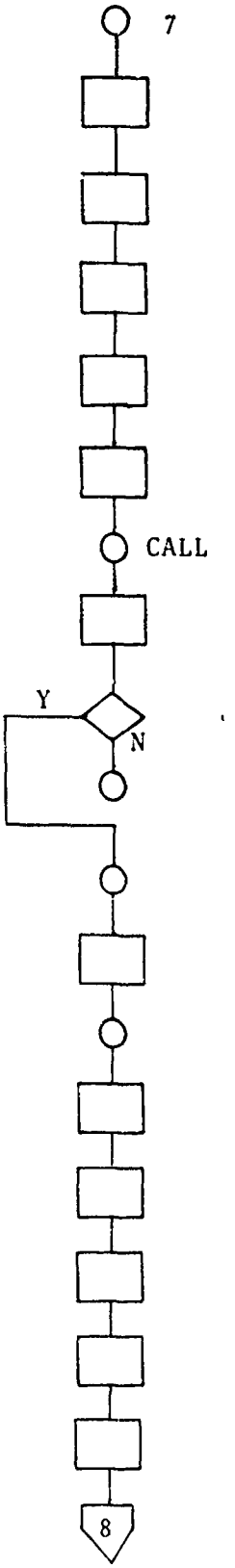
X1603=NØ. OF POST FLIGHTS INSPECTIONS AT THE MOS

X1604=NØ. OF DAILY INSPECTIONS AT THE MOS

X1605=NØ. OF INTERMEDIATE INSPECTIONS AT THE MOS

X1606=NØ. OF PERIODIC INSPECTIONS AT THE MOS

HELPA MCOST,X1601,X1602,X1603,X1604,X1605,X1606
DETERMINE CONSUMABLE COST/INSPECTION



X1602=PREFLIGHT MAINTENANCE MAN-HOURS AT THE MOS

X1603=POST FLIGHT MAINTENANCE MAN-HOURS AT THE MOS

X1604=DAILY MAINTENANCE MAN-HOURS AT THE MOS

X1605=INTERMEDIATE MAINTENANCE MAN-HOURS AT THE MOS

X1606=PERIODIC MAINTENANCE MAN-HOURS AT THE MOS

HELPA MCOST,X1601,X1602,X1603,X1604,X1605,X1606
DETERMINE INSPECTION COSTS AND PRINT

P2=15; TOTALS PRINTED?

GO TO CLP1

INSPECTION AND UNSCHEDULED MAINTENANCE PERSONNEL COST

LOAD SUBROUTINE SHFTHR

COMPUTE MANHOURS AVAILABLE

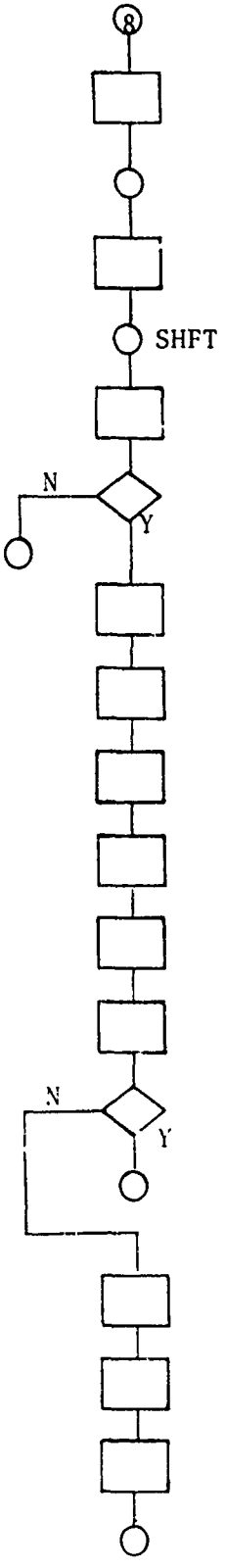
X1601=X192; NO. OF WORKDAYS/WEEK

X1602=MX3(1,1);LENGTH OF FIRST SHIFT IN .1 HOURS

X1603=MX3(2,1);LENGTH OF SECOND SHIFT IN .1 HOURS

X1604=MX3(1,4);OFFSET FOR START OF WORKDAY

X1605=MX1(5,1);SIMULATION LENGTH IN .1 HOURS



HELPB SHFTHR,1601XF,1602XF,1603XF,1604XF,1605XF
DETERMINE NO. OF HOURS SHIFTS WERE AVAILABLE

DETERMINE AND PRINT AVUM PERSONNEL COSTS

P2=0; MOS LEVEL=0

P2=P2+1; INCREMENT AVUM MOS LEVEL

P2≠12; LAST AVUM MOS?

GO TO CTOT

P3=V27; SHIFT 1 MANPOWER STORAGE LOCATION

P3=V241; DETERMINE STORAGE CAPACITY

P4=V28; SHIFT 2 MANPOWER STORAGE LOCATION

P4=V242; DETERMINE STORAGE CAPACITY

X1601=V236;SHIFT 1 AVAILABLE MAN-HOURS

X1601=X1601+V237; TOTAL AVAILABLE MAN-HOURS FOR P2

X1601=0; MOS NOT USED

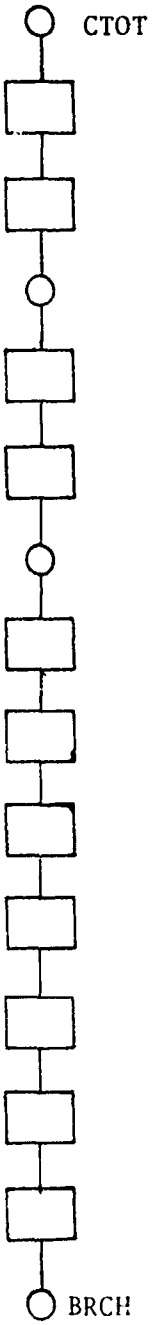
GO TO SHFT

X1602=V238; TOTAL MAN-HOURS WORKED IN .01 HOURS

X1603=MX2(P2,20); OVERTIME HOURS IN .01 HOURS

HELPA MCOST,P2,X1601,X1602,X1603
DETERMINE AND PRINT AVUM PERSONNEL COSTS

GO TO SHFT

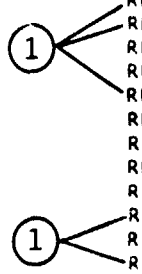



```
P2=15; INDICATES PERSONNEL COST TOTALS
ARE TO BE PRINTED

HELPA MCOST,P2;PRINT PERSONNEL COST TOTALS

SUBSYSTEM MAINTENANCE COST

X1601=MX1(5,1);LENGTH OF SIMULATION IN .1 HOURS

HELPA MCOST,X1601
PERFORM SUBSYSTEM MAINTENANCE COST ROUTINE

COMPANY COST STATISTICS

X1601=X183; FLIGHT TIME IN .1 HOURS

X1602=X250; PLATOON MISSIONS COMPLETED

X1603=MX1(5,1); LENGTH OF SIMULATION IN .1 HOURS

X1604=X700; UPTIME/TOTAL TIME (IN .01%)

X1605=V243; FLOWN/CALLED (IN. .01%)

X1606=X750; COMPLETED/CALLED (IN .01%)

HELPA MCOST,X1601,X1602,X1603,X1604,X1605,X1606

END COST ROUTINE
```

5.3 RMS COST Model Program Listing with Annotations for RMS Code Modifications

This section presents a complete listing of the RMS model program. Each modification in the RMS code to incorporate the COST logic is indicated in this listing by a successive encircled number which is annotated accordingly.

```
*** GPSS V - U S VERSION ***
    *** IBM PROGRAM PRODUCT 5734-XS2 (V1M3) ***
```



```
REALLOCATE BLU,1400                                    00000100
REALLOCATE FAC,0                                       00000150
REALLOCATE STC,90                                      00000200
REALLOCATE QUE,70                                      00000250
REALLOCATE LOG,40                                      00000300
REALLOCATE FUN,55                                      00000350
REALLOCATE TAP,15                                      00000400
REALLOCATE BVP,20                                      00000450
REALLOCATE VAR,250                                     00000500
REALLOCATE FSV,1700                                    00000550
REALLOCATE HSV,90                                      00000600
REALLOCATE CHA,60                                      00000650
REALLOCATE GRP,70                                      00000700
REALLOCATE FMS,5                                       00000750
REALLOCATE HMS,7                                       00000800
REALLOCATE XAC,400                                     00000850
REALLOCATE COM,110000                                  00000900
```

1. The memory requirements for the entities were changed to minimize the impact of the increased core requirements imposed by the RMS COST logic.

```
      *LOC  OPERATION  A,B,C,D,E,F,G,H,I          COMMENTS
(2)         SIMULATE   9                                              00000950
            UNLIST     ABS                                            00001000
        1   VARIABLE   P2+K5                                          00001050
        2   VARIABLE   P11+K5                                         00001100
        3   VARIABLE   P11+K8                                         00001150
        4   VARIABLE   P11+K11                                        00001200
        5   VARIABLE   P4+K5                                          00001250
        6   VARIABLE   P4+K3                                          00001300
        7   VARIABLE   P11+K13                                        00001350
        8   VARIABLE   P4+K13                                         00001400
        9   VARIABLE   P3-C1                                          00001450
       10   VARIABLE   RN1*28/1000                                    00001500
       11   VARIABLE   RN1*7/1000                                     00001550
       13   VARIABLE   RN1*1000+RN1                                   00001600
       14   VARIABLE   P8+K3                                          00001650
       15   VARIABLE   P8+K13                                         00001700
       16   VARIABLE   P8+K18                                         00001750
       17   VARIABLE   P8+K24                                         00001800
       18   VARIABLE   FN4/2                                          00001850
       19   VARIABLE   (320-V20)#K240                                 00001900
       20   VARIABLE   C1@240                                         00001950
       21   VARIABLE   P14@MX1(1,10)                                  00002000
       23   VARIABLE   FN6/10000                                      00002050
       24   VARIABLE   FN6/100@100                                    00002100
       25   VARIABLE   FN6@100                                        00002150
       26   VARIABLE   P17+8                                          00002200
       27   VARIABLE   P2+32                                          00002250
       28   VARIABLE   P2+43                                          00002300
       29   VARIABLE   P22*P20                                        00002350
       30   VARIABLE   P2+8                                           00002400
       31   VARIABLE   P2+43-P4*11                                    00002450
       32   VARIABLE   8+BV14                                         00002500
       33   VARIABLE   K2+BV14*8                                      00002550
       34   VARIABLE   K3+BV14*8                                      00002600
       35   VARIABLE   230-C1@240   TIME REMAINING 2ND SHIFT          00002650
       36   VARIABLE   P3*P4                                          00002700
       37   VARIABLE   P2+20                                          00002750
       38   VARIABLE   150-C1@240   TIME LEFT ON 1RST SHIFT           00002800
       39   VARIABLE   P4-P20                                         00002850
       40   VARIABLE   P2+29                                          00002900
       41   VARIABLE   P19+39                                         00002950
       42   VARIABLE   P3*100+P5                                      00003000
       45   VARIABLE   FN37/K1000                                     00003050
       46   VARIABLE   P22/100                                        00003100
       47   VARIABLE   P1+25                                          00003150
       48   VARIABLE   FN40/10000                                     00003200
       49   VARIABLE   FN40@10000/100                                 00003250
       50   VARIABLE   FN40@100                                       00003300
       51   VARIABLE   P1+28                                          00003350
       52   VARIABLE   FN42/10000                                     00003400
       53   VARIABLE   FN42@10000/100                                 00003450
       54   VARIABLE   FN42@100                                       00003500
       55   VARIABLE   K0+(FN43@1000*FN36+500)/1000                   00003550
       56   VARIABLE   P4*10                                          00003600
       57   VARIABLE   (MX1(4,5)*FN36+500)/1000                       00003650
```

2. The maximum run lengths used for all simulations of 6 months and less and for all simulations of 1 year were 9 and 11 CPU minutes, respectively.

```
58    VARIABLE   P2+37                                                    00003700
59    VARIABLE   1+BV4                                                    00003750
60    VARIABLE   M1*K10                                                   00003800
61    VARIABLE   FN45                                                     00003850
62    VARIABLE   N$NORD-N$NORW                                            00003900
63    VARIABLE   P2+K49                                                   00003950
64    VARIABLE   P1+C1                                                    00004000
65    VARIABLE   (FN43/1000*FN36+K500)/1000                               00004050
66    VARIABLE   FN43/1000                                                00004100
67    VARIABLE   FN47/1000                                                00004150
68    VARIABLE   (FN49@10000*FN36+500)/1000 TIME FOR DEPOT REPAIR         00004200
69    VARIABLE   P28+K63                                                  00004250
70    VARIABLE   P31*P4                                                   00004300
71    VARIABLE   FN37@K1000                                               00004350
72    VARIABLE   FN47/1000                                                00004400
73    VARIABLE   FN47@1000                                                00004450
74    VARIABLE   P3+MX3(*2,4)-C1                                          00004500
76    VARIABLE   P8-R*1                                                   00004550
77    VARIABLE   P4+43                                                    00004600
78    VARIABLE   P4+32                                                    00004650
79    VARIABLE   P3+P5                                                    00004700
80    VARIABLE   P2+K4+4(K3-P14)                                          00004750
81    VARIABLE   K21+P4+K11(K3-P14)                                       00004800
82    VARIABLE   P5-C1@P3                                                 00004850
83    VARIABLE   P6-R*7                                                   00004900
84    VARIABLE   MX1(5,2)+MX1(5,3)+MX1(5,4)                               00004950
85    FVARIABLE  X183*10/(X500+X450+X400)  MT28M                          00005000
86    FVARIABLE  (X550*10)/X183+X501    INSP & SERVICE MMH/FH             00005050
87    FVARIABLE  (X550*10)/X183         SCHEDULED MMH/FH                  00005100
88    FVARIABLE  (X575*10)/X183         AVUM CORRECTINE MMH/FH            00005150
89    FVARIABLE  (X107*10)/X183         IS CORRECTIVE MMH/FH              00005200
90    FVARIABLE  (X521+X522)            AVUM+IS CORR MMH/FH               00005250
91    FVARIABLE  (X75*10)/X183          DEPOT CORRECTIVE MMH/FH           00005300
92    FVARIABLE  (X521+X522+X519)       TOTAL CORRECTIVE MMH/FH           00005350
95    VARIABLE   FN50/1000        NO MEN OFF AC REPAIR AT IS              00005400
96    VARIABLE   FN50@1000        NO MEN OFF AC REPAIR AT DEPOT           00005450
97    VARIABLE   (X183*10)/X500   SYSTEM MTBF                             00005500
135   VARIABLE   FN31/1000                                                00005550
136   VARIABLE   FN54@100                                                 00005600
137   VARIABLE   FN54/K100                                                00005650
138   VARIABLE   (FN53/1000*FN36+500)/1000                                00005700
139   VARIABLE   FN52/1000                                                00005750
140   VARIABLE   FN52@1000                                                00005800
141   VARIABLE   (FN47@1000*FN36+500)/1000                                00005850
142   VARIABLE   P28+56                                                   00005900
143   VARIABLE   P28+95                                                   00005950
144   VARIABLE   CH1+W$ARM14                                              00006000
145   VARIABLE   240-P3-P2                                                00006050
146   VARIABLE   (MH6(26,P15)*RN1/1000) AC HRS TO TBC CHANGE              00006100
147   VARIABLE   P40@X189  A/C HRS MOD PMP INTERVAL                       00006150
148   VARIABLE   P40@X190  A/C HRS MOD PMI INTERVAL                       00006200
149   VARIABLE   MH6(P14,P12)*10-P40                                      00006250
150   VARIABLE   P40/10+MH6(26,*12) NEXT TIME TBO REPLACEMENT DUE         00006300
151   VARIABLE   P146K200                                                 00006350
152   VARIABLE   P146K800                                                 00006400
153   VARIABLE   P146K225                                                 00006450
154   VARIABLE   P146K825                                                 00006500
155   VARIABLE   P146K250                                                 00006550
156   VARIABLE   P146K850                                                 00006600
157   VARIABLE   P146K275                                                 00006650
158   VARIABLE   P146K875                                                 00006700
159   VARIABLE   P146K300                                                 00006750
160   VARIABLE   P146K900                                                 00006800
```

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161   VARIABLE   P14&K325                                                    00006650
162   VARIABLE   P14&K925                                                    00006900
163   VARIABLE   P14&K350                                                    00006950
164   VARIABLE   P14&K950                                                    00007000
165   VARIABLE   P14+375                                                     00007050
166   VARIABLE   P14+975                                                     00007100
167   VARIABLE   P14+400                                                     00007150
168   VARIABLE   P14+1000                                                    00007200
169   VARIABLE   P14+425                                                     00007250
170   VARIABLE   P14+1025                                                    00007300
171   VARIABLE   P14+450                                                     00007350
172   VARIABLE   P14+1050                                                    00007400
173   VARIABLE   P14+475                                                     00007450
174   VARIABLE   P14+1075                                                    00007500
175   VARIABLE   P14+500                                                     00007550
176   VARIABLE   P14+1100                                                    00007600
177   VARIABLE   P5+525                                                      00007650
178   VARIABLE   K300+P5                                                     00007700
179   VARIABLE   K350+P5                                                     00007750
180   VARIABLE   K400+P5                                                     00007800
181   VARIABLE   K450+P5                                                     00007850
182   VARIABLE   X*1+X*2+X*3+X*4                                             00007900
183   VARIABLE   X325+X375+X425+X475                                         00007950
184   VARIABLE   P14+1175                                                    00008000
185   VARIABLE   P14+575                                                     00008050
186   VARIABLE   P14+1200                                                    00008100
187   VARIABLE   P14+600                                                     00008150
188   VARIABLE   P5+1125                                                     00008200
189   VARIABLE   P14+550                                                     00008250
190   VARIABLE   P14+1150                                                    00008300
191   VARIABLE   P20*P22                                                     00008350
192   VARIABLE   P14+1225                                                    00008400
193   VARIABLE   K625+P6                                                     00008450
194   VARIABLE   K1250+P14                                                   00008500
195   VARIABLE   K650+P14                                                    00008550
196   VARIABLE   P14*K1400   IDENTIFIES  BY A/C NORS TIME SAVEVALUES         00008600
204   VARIABLE   K1350+P14                                                   00008650
205   VARIABLE   K750+P14                                                    00008700
206   VARIABLE   K1362+P14                                                   00008750
207   VARIABLE   1425+P14                                                    00008800
208   VARIABLE   1550+P14                                                    00008850
209   VARIABLE   1450+P14                                                    00008900
210   VARIABLE   1575+P14                                                    00008950
211   VARIABLE   1475+P14                                                    00009000
212   VARIABLE   (X*1+X*2)*10                                                00009050
213   VARIABLE   P7/(X*3+X*4+X*5)                                            00009100
214   VARIABLE   (X550+X575)*10/(X275+X1450+X1500)                           00009150
215   VARIABLE   X275+X1450+X1500                                            00009200
216   FVARIABLE  (MX1(5,1)-X1-X3)*1COCO/MX1(5,1) BY AC OPER AVAIL            00009250
217   FVARIABLE  (X191*MX1(5,1)-X675-X1425)*10000/(X191*MX1(5,1)) A(O)       00009300
218   FVARIABLE  X*1*10000/X*2                                               00009350
219   FVARIABLE  (X*1+X*2)*10000/X*3                                         00009400
220   FVARIABLE  (X250+X786)10000/X225                                       00009450
221   FVARIABLE  X250*10000/X225                                             00009500
222   VARIABLE   P14+K525                                                    00009550
223   VARIABLE   P14+K1125                                                   00009600
224   VARIABLE   G1+G32+G30+G37                                              00009650
225   VARIABLE   (G31+G32)*K80                                               00009700
226   VARIABLE   (G31+G32)*560                                               00009750
227   VARIABLE   (G30+G37)*K80                                               00009800
228   VARIABLE   (G30+G37)*K560                                              00009850
229   FVARIABLE  (X191*MX1(5,1)-X625)*10000/(X191*MX1(5,1)) INHER AV         00009900
230   FVARIABLE  (X191*MX1(5,1)-X675)*10000/(X191*MX1(5,1)) ACH AVAIL        00009950
231   VARIABLE   (RN1*1000+RN1)&X189  TIME ON THE AIRCRAFT                   00010000
234   VARIABLE   X189-FN4     PMP WINDOW                                     00010050
235   VARIABLE   X190-FN4     PMI WINDOW                                     00010100
```

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236 VARIABLE   (P3*X1652)/10        CCST SUBROUTINE VARIABLE                00010150
237 VARIABLE   (P4*X1653)/10        CCST SUBROUTINE VARIABLE                00010200
238 VARIABLE   MX2(P2,18)+MX2(P2,19)+MX2(P2,23)+MX2(P2,25)                  00010250
241 VARIABLE   R*3+S*3       STORAGE CAPACITY                               00010400
242 VARIABLE   R*4+S*4       STORAGE CAPACITY                               00010450
243 VARIABLE   (X225*10000)/XH1      CALLED/FLOWN   MISSION 1               00010500
244 VARIABLE   (P19*P3)                                                     00010550
  1 BVARIABLE  V20'G'250          ARMY DUMMY,POST FLT                       00010600
  2 BVARIABLE  V20'G'250          DUMMY NO RESPOT                           00010650
  3 BVARIABLE  V20'L'145*V20'G'75                                           00010700
  4 BVARIABLE  P25'E'K1359                                                  00010750
  7 BVARIABLE  V20'L'250                                                    00010800
 10 BVARIABLE  P5'E'9999+P26'E'1  SPLIT SHFT OR SEC. MOS-COST FLAG          00010850
 11 BVARIABLE  V20'L'K220*V20'G'K185   DAILY OUT OF MAINT.                  00010900
 14 BVARIABLE  P17'E'K8                                                     00010950
 17 BVARIABLE  V144'L'X194*P8'E'1*P26'E'1                                   00011000
 18 BVARIABLE  P19'E'2+P19'E'5                                              00011050
 19 BVARIABLE  V20'G'70*V20'L'230*LR14                                      00011100
```

3. Variables 236 and 237 establish the available work center (MOS) manpower on the first and second shifts, respectively. P3 and 4 are the storage capacities for the first and second shift AVUM MOS manpower. X1652 and X1653 are the total number first and second shift hours that AVUM MOS levels are available during a simulation.

4. Variable 238 sums the total number of unscheduled maintenance man-hours for a given AVUM MOS: MX2(P2,18) is the AVUM off aircraft repair time; MX2(P2,19) is the time change component labor; MX2(P2,23) is the remove/replace and on aircraft repair time; MX2(P2,25) is the corrosion control labor.

5. Variables 241 and 242 establish the capacity of AVUM MOS storages from the current contents of the storage and the remaining available capacity of the storage. P3 is the location of the first shift MOS level (storages 33 to 43), and P4 is the location of the second shift MOS level (storages 44 to 54).

6. Variable 243 determines the percentage of the missions flown to the missions called. Savevalue 225 is the total number of missions flown (including flights which were later aborted). Halfword Savevalue 1 is the total number of flights called for during the simulation. The variable is used in Table VI, RMS Cost Summary.

7. Variable 244 determines the overtime maintenance man-hours required to complete an AVUM maintenance action. P19 is the overtime hours and P3 is the manpower.

8. Boolean Variable 10 ensures that AVUM maintenance actions which have secondary work centers (MOS) assigned or require more than one shift to be completed are properly accounted for. In such instances, there are two transactions for one maintenance action. BV10 therefore permits the counter for the event to be incremented only once.

```
1  MATRIX    H,10,22                                                    00011150
2  MATRIX    H,2,2                                                      00011200
3  MATRIX    H,45,9                                                     00011250
5  MATRIX    H,45,9                                                     00011300
6  MATRIX    H,28,28          INCREASE SIZE FOR 24 AC, 24 TBO ITEMS     00011350
7  MATRIX    H,15,27    LCST RTN MATRIX, COUNT INSPECTIONS              00011400
1  MATRIX    X,15,13                                                    00011450
2  MATRIX    X,15,27                                                    00011500
3  MATRIX    X,12,11                                                    00011550
4  MATRIX    X,2,40                                                     00011600
5  MATRIX    X,45,9                                                     00011650
1  TABLE     P17,0,1,27     NUMBER INSPECTIONS PERFORMED                00011700
2  TABLE     P8,0,1,11      FLIGHTS BY MISSION TYPE                     00011750
3  TABLE     P17,0,1,27     NUMBER INSPECTIONS                          00011800
4  TABLE     P19,0,1,27     MA*S BY WHEN DISCOVERED                     00011850
5  TABLE     P3,0,1,45      MA*S BY SYSTEM                              00011900
6  TABLE     P19,0,1,27     MA*S BY SYSTEM & WHEN DISCOVERED            00011950
7  TABLE     FN46,0,1,300                                               0 012000
8  TABLE     V56,20,20,125  ORGANIZATIONAL MTTR                         00012050
9  TABLE     V60,20,20,250  DOWNTIME DISTRIBUTION                      00012100
10 TABLE     FN46,0,1,300   NORS EVENTS                                 00012150
11 TABLE     FN46,0,1,300   CANNIBALIZED PARTS                         00012200
12 TABLE     FN46,0,1,300   PARTS CAUSING NORS OR CANNIBALIZATION       00012250
13 TABLE     FN46,0,1,300   PARTS R AND R BY SERVICE PLATOON            00012300
14 TABLE     V56,0,20,125       MTTR FOR OFF AIRCRAFT PART REPAIR       00012350
15 TABLE     FN46,0,1,300                                               00012400
   STORAGE   S33,40                                                     00012450
   STORAGE   S34,0                                                      00012500
   STORAGE   S35,30                                                     00012550
   STORAGE   S36,10                                                     00012600
   STORAGE   S37,20                                                     00012650
   STORAGE   S38,40                                                     00012700
   STORAGE   S39-S43,0                                                  00012750
   STORAGE   S44,20                                                     00012800
   STORAGE   S45,0                                                      00012850
   STORAGE   S46,0                                                      00012900
   STORAGE   S47,0                                                      00012950
   STORAGE   S48,20                                                     00013000
   STORAGE   S49,20                                                     00013050
   STORAGE   S50-S54,0                                                  00013100
```

(9) (10)

9. Matrix Halfword 7 was added to tally the number of inspections. Matrix rows represent MOS levels. Column 2 is pre-flight inspection; column 8 is intermediate inspection (PMI); column 11 is post-flight inspection; column 16 is daily inspection; column 17 is periodic inspection (PMP).

10. First shift AVUM MOS storages 33-43 and second shift AVUM MOS storages 44-54 each contain personnel in 0.1-man increments and were optimized for the given execution:

Storage	Description
33,44	On aircraft repair
35,46	Periodic inspection and off aircraft repair
36,47	Pre-flight inspection
37,48	Daily inspection
38,49	Secondary on aircraft repair
34,45, 39-43, 50-54	No personnel assignments

```
 1     FUNCTION   P4,D6 RECONFIGURATION SORT                                  C0013150
0      1     1    2     2     3     3     4     4     5     5     0          00013200
 2     FUNCTION   P17,D8  GROUND EVENT PROB OF SUCCESS                        00013250
1      9999992    9998655    9999998    99999911   99999912   999999900013300
16     96967217   0                                                          00013350
 3     FUNCTION   P8,D2 PROB NO MA DURING FLIGHT                             00013400
0      9505071    950507                                                     00013450
 4     FUNCTION   P8,D2 MISSION DURATION                                     00013500
0      10    1    10                                                         00013550
 5     FUNCTION   P8,D2 PROB NO ABORT/MA IN FLIGHT                           00013600
0      7050051    705005                                                     00013650
 6     FUNCTION   P17,D3 LINE MAINT MPR, MDS, TIME                           00013700
1      0     2    10040216   200507                                          00013750
 7     FUNCTION   P17,D14 MAINTENANCE PRIORITY                               00013800
1      8     2    3     3     7     4     2     5     12    6     1          00013850
7      13    8    9     9     10    10    11    11    5     12    4          00013900
13     6     14   14                                                         00013950
 8     FUNCTION   P17,D2 QUEUE LIMIT GROUND EVENTS                           00014000
1      6     3    999999                                                     00014050
 9     FUNCTION   P19,F5 WHEN DISC SORT MULT FAIL                            00014100
2      FN10  6    FN11  7    FN11  16   FN12  17   FN13                       00014150
 10    FUNCTION   RN1,D2 PROB MULT MA/ MA IN PREFLIGHT                       00014200
0.99981    0.99992                                                          00014250
 11    FUNCTION   RN1,D3 PROB MULT MA/ MA IN FLIGHT                          00014300
0.97481    0.99962    1.00003                                               00014350
 12    FUNCTION   RN1,D3 PROB MULT MA/ MA IN DAILY                           00014400
0.98471    0.99982    1.00003                                               00014450
 13    FUNCTION   RN1,D31 PROB MULT MA/ MA IN PERIODIC                       00014500
0.00045    0.00116    0.00327    0.00778    0.01669    0.032510           00014550
0.056411   0.096912   0.149513   0.217414   0.297815   0.387216           00014600
0.481817   0.575318   0.663319   0.741820   0.808621   0.862822           00014650
0.904923   0.936224   0.958625   0.974026   0.984227   0.990628           00014700
0.994629   0.997030   0.998431   0.999132   0.999633   0.999834           00014750
0.999935                                                                   C0014800
 15    FUNCTION   P19,E5 WHEN DISC SORT SYSTEM FAILURE                       00014850
2      FN16  6    FN17  7    FN17  16   FN18  17   FN19                       00014900
 16    FUNCTION   RN1,D10 PROB SYS MA/ MA DUR PREFLIGHT                      00014950
0.05361    0.06052    0.24773    0.82024    0.82635    0.84666            00015000
0.93157    0.93998    0.95879    1.000010                                  00015050
 17    FUNCTION   RN1,D10 PROB SYS MA/ MA DUR FLIGHT                         00015100
0.03971    0.04682    0.28943    0.74104    0.74575    0.77716            00015150
0.86557    0.87898    0.89999    1.000010                                  00015200
 18    FUNCTION   RN1,D10 PROB SYS MA/ MA DUR DAILY                          00015250
0.04881    0.05842    0.20723    0.85794    0.86395    0.88086            00015300
0.96877    0.97628    0.98989    1.000010                                  00015350
 19    FUNCTION   RN1,D10 PROB SYS MA/ MA DUR PERIODIC                       00015400
0.06451    0.06992    0.22813    0.87034    0.87775    0.88946            00015450
0.96547    0.96988    0.98659    1.000010                                  00015500
 22    FUNCTION   P3,L10 NUMBER OF ELEMENTS IN SYSTEMS                       C0015550
1      11    2    3     3     15    4     31    5     4     6     10         00015600
7      9     8    4     9     7     10    12                               00015650
 23    FUNCTION   P19,F5 WHEN DISC SORT ELEMENT FAILURE                      00015700
2      FN24  6    FN25  7    FN25  16   FN26  17   FN27                       00015750
 24    FUNCTION   FN46,L106 PROB EL MA/ SYS MA PREFLIGHT                     00015800
101    155   102  26    103   56    104   67    105   104   106   77         00015850
107    87    108  85    109   94    110   139   111   110   201   258        00015900
202    655   203  86    301   39    302   167   303   546   304   2          00015950
305    0     306  15    307   0     308   20    309   47    310   29         00016000
311    27    312  3     313   51    314   22    315   30    401   31         00016050
402    3     403  43    404   28    405   28    406   0     407   161        C0016100
408    93    409  2     410   12    411   77    412   33    413   3          00016150
414    0     415  46    416   7     417   1     418   6     419   11         00016200
420    11    421  67    422   0     423   30    424   4     425   11         00016250
426    73    427  1     428   12    429   170   430   25    431   13         00016300
501    324   502  162   503   228   504   286   601   165   602   180        00016350
603    79    604  80    605   131   606   60    607   92    608   67         00016400
609    67    610  73    701   68    702   337   703   133   704   24         00016450
705    33    706  30    707   189   708   155   709   30    801   611        00016500
802    111   803  63    804   215   901   148   902   175   903   95         00016550
904    44    905  111   906   62    907   415   1001  47    1002  120        00016600
1003   45    1004 62    1005  0     1006  0     1007  273   1008  171        00016650
1009   85    1010 86    1011  35    1012  76                               00016700
```

```
 25    FUNCTION   FN46,L106 PROB EL MA/ SYS MA FLIGHT                    00016750
101  171  102   5  103   68  104   90  105   68  106   65              00016800
107   66  108 121  109  179  110   66  111  101  201  360              00016850
202  640  203   0  301   52  302  139  303  556  304    2              00016900
305    8  306  12  307    5  308   19  309   56  310   43              00016950
311   41  312   4  313   12  314   20  315   32  401   46              00017000
402    1  403  43  404    0  405    7  406    0  407  152              00017050
408   75  409   2  410   19  411  100  412    6  413    5              00017100
414    7  415  46  416   10  417    1  418    8  419   20              00017150
420   12  421  82  422    6  423   37  424    4  425   14              00017200
426  101  427   1  428   17  429  137  430   31  431   11              00017250
501  389  502  43  503  417  504  152  601  180  602  307              00017300
603   67  604  90  605   70  606   34  607  128  608   65              00017350
609   11  610  47  701   74  702  223  703  159  704   40              00017400
705   63  706  29  707  343  708   39  709   31  801  651              0001745C
802   74  803  70  804  206  901  175  902  411  903    0              00017500
904   35  905  33  906  147  907  200 1001   37 1002  107              00017550
1003  42 1004  58 1005    9 1006   51 1007  273 1008  156              00017600
1009  62 1010  79 1011   32 1012   73                                   00017650
 26    FUNCTION   FN46,L106 PROB EL MA/ SYS MA DAILY                    00017700
101  202  102   8  103   89  104  103  105  106  106   86              00017750
107   47  108  64  109   73  110  122  111   99  201  207              00017800
202  580  203 213  301   25  302  212  303  532  304    3              00017850
305    7  306  30  307   10  308   16  309   44  310   28              00017900
311   20  312   4  313   26  314   30  315   14  401   22              00017950
402    3  403  47  404   44  405   36  406    1  407  174              00018000
408   99  409   2  410    5  411   69  412    9  413    3              00018050
414    0  415  26  416    6  417    1  418    4  419    4              00018100
420    8  421  79  422    0  423   31  424    1  425   10              00018150
426   55  427   1  428   10  429  219  430   24  431    9              00018200
501  602  502 177  503  142  504   79  601  244  602    0              00018250
603   25  604 110  605  172  606   55  607   24  608  119              00018300
609  139  610 114  701    0  702  315  703  160  704   13              00018350
705   15  706  37  707  181  708  258  709   20  801  678              00018400
802    0  803 103  804  219  901  264  902    0  903   16              00018450
904   16  905  40  906    0  907  664 1001   86 1002  122              00018500
1003  29 1004  44 1005    0 1006    2 1007  151 1008  263              00018550
1009  79 1010 149 1011   26 1012   29                                   00018600
 27    FUNCTION   FN46,L106 PROB EL MA/ SYS MA PERIODIC                 00018650
101  106  102  45  103   40  104   45  105  124  106   82              00018700
107  114  108  75  109   59  110  188  111  122  201  184              00018750
202  730  203  85  301   27  302  180  303  518  304    1              00018800
305    1  306  11  307   14  308   23  309   34  310   11              00018850
311   10  312   1  313  111  314   22  315   33  401   26              00018900
402    4  403  40  404   37  405   36  406    6  407  158              00018950
408   99  409   2  410   11  411   65  412   60  413    1              00019000
414    4  415  53  416    6  417    1  418    0  419    9              00019050
420    9  421  51  422    5  423   24  424    4  425    9              00019100
426   63  427   1  428    9  429  165  430   20  431   16              00019150
501  190  502 222  503  153  504  434  601   79  602    0              00019200
603  140  604  36  605  246  606  148  607   53  608   39              00019250
609  151  610 110  701   99  702  474  703   65  704   14              00019300
705   12  706  29  707   47  708  225  709   36  801  454              00019350
802  295  803  16  804  235  901   85  902    0  903   98              00019400
904   62  905 209  906    0  907  545 1001   76 1002  128              00019450
1003  41 1004  60 1005   30 1006  232 1007  127 1008  119              00019500
1009  45 1010  50 1011   35 1012   56                                   00019550
 36    FUNCTION   RN5,L24 EXPONENTIAL DISTRIBUTION                      00019600
  0     0   .1  104   .2  222   .3  355   .4  509   .5  690            00019650
 .6   915   .7 1200  .75 1380   .8 1600  .84 1830  .88 2120            00019700
 .9  2300  .92 2520  .94 2810  .95 2990  .96 3200  .97 3500            00019750
 .98 3900  .99 4600 .995 5300 .998 6200 .999 7000 .9998 8000           00019800
 37    FUNCTION   FN46,L106 PERCENT REM & REP, PERCENT DEP RPR/RLD      00019850
101 171000102  793000103  288000104  828000105  536000106  575000000019900
107 486000108  515000109  201000110  538000111  680999201  893000000019950
202 863000203  786000301  205000302  965999303  561999304  211999000020000
305 146999306  641999307  225000308  950000309  818000310  743000000020050
311 766999312  750999313  968000314  848000315  665000401  695000000020100
402 958000403  831999404  996000405  998000406  931000407  975000000020150
408 943999409  560000410  945000411  971999412  963000413  145000000020200
414 773000415  890599416  920000417  526000418  941000419  233000000020250
420 946000421  921999422  716000423  495000424  888000425  973000000020300
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426  341999427  750000428  926000429  980999430  846999431  90399900020350
501  106000502  128000503  666000504  866000601  480000602  64000000020400
603  866000604  921000605  943000606  745000607  491000608  72300000020450
609  358000610  596000701  905000702  200000703  856000704  92600000020500
705  716000706  743C007C7  923000708  961000709  781000801  11600000020550
802  931000803  640000804  923000901  333000902  926000903  10000000020600
904  768000905  998000906  500000907  8360001001 6850001002 15500000020650
1003 7650001004 7030001005 1430001006 7030001007 4030001008 39100000020700
1009 3210001010 4330001011 7210001012 845000                            00020750
 38   FUNCTION  P22,D106 PRCB OF PART AVAILABILITY                        00020800
101  990  102  990  103  990  104  990  105  990  106  990              00020850
107  990  108  990  109  990  110  990  111  990  201  990              00020900
202  990  203  990  301  990  302  990  303  990  304  990              00020950
305  990  306  990  307  990  308  990  309  990  310  990              00021000
311  990  312  990  313  990  314  990  315  990  401  990              00021050
402  990  403  990  404  990  405  990  406  990  407  990              00021100
408  990  409  990  410  990  411  990  412  990  413  990              00021150
414  990  415  990  416  990  417  990  418  990  419  990              00021200
420  990  421  990  422  990  423  990  424  990  425  990              00021250
426  990  427  990  428  990  429  990  430  990  431  990              00021300
501  990  502  990  503  990  504  990  601  990  602  990              00021350
603  990  604  990  605  990  606  990  607  990  608  990              00021400
609  990  610  990  701  990  702  990  703  990  704  990              00021450
705  990  706  990  707  990  708  990  709  990  801  990              00021500
802  990  803  990  804  990  901  990  902  990  903  990              00021550
904  990  905  990  906  990  907  990  1001 990  1002 990              00021600
1003 990  1004 990  1005 990  1006 990  1007 990  1008 990              00021650
1009 990  1010 990  1011 990  1012 990                                  00021700
 39   FUNCTION  P1,E3 VARIABLE SORT FOR MOS                             00021750
1    V50  2    V49  3    V48                                           00021800
 40   FUNCTION  FN46,L106 AVUM OFF AC MOS, 2MOS, 1MOS ON AC             00021850
101  20601 102  20601 103  20601 104  20601 105  20601 106  20601      00021900
107  20601 108  20601 109  20601 110  20601 111  20601 201  20601      00021950
202  20601 203  20601 301  20601 302  20601 303  20601 304  20601      00022000
305  20601 306  20601 307  20601 308  20601 309  20601 310  20601      00022050
311  20601 312  20601 313  20601 314  20601 315  20601 401  20601      00022100
402  20601 403  20601 404  20601 405  20601 406  20601 407  20601      00022150
408  20601 409  20601 410  20601 411  20601 412  20601 413  20601      00022200
414  20601 415  20601 416  20601 417  20601 418  20601 419  20601      00022250
420  20601 421  20601 422  20601 423  20601 424  20601 425  20601      00022300
426  20601 427  20601 428  20601 429  20601 430  20601 431  20601      00022350
501  20601 502  20601 503  20601 504  20601 601  20601 602  20601      00022400
603  20601 604  20601 605  20601 606  20601 607  20601 608  20601      00022450
609  20601 610  20601 701  20601 7C2  20601 703  20601 704  20601      00022500
705  20601 706  20601 707  20601 708  20601 709  20601 801  20601      00022550
802  20601 803  20601 804  20601 901  20601 902  20601 903  20601      00022600
904  20601 905  20601 906  20601 907  20601 1001 20601 1002 20601      00022650
1003 20601 1004 20601 1005 20601 1006 20601 1007 20601 1008 20601      00022700
1009 20601 1010 20601 1011 20601 1012 20601                            00022750
 41   FUNCTION  P1,E3 VARIABLE SORT MANPOWER DEF                        00022800
1    V54  2    V53  3    V52                                           00022850
 42   FUNCTION  FN46,L106 AVUM MPR OFF AC RPR, 2MOS, 1MOS R&P MPR       00022900
101  101010102  102020103  104040104  102020105  102020106  10101000022950
107  101010108  102020109  102020110  103030111  103030201  10202000023000
202  102020203  102020301  102020302  102020303  203030304  20202000023050
305  201010306  201010307  202020308  101010309  101010310  10101000023100
311  101010312  101010313  101010314  101010315  101010401  20202000023150
402  202020403  101010404  101010405  101010406  202020407  20202000023200
408  202020409  101010410  101010411  303030412  101010413  20202000023250
414  101010415  202020416  202020417  101010418  101010419  10101000023300
420  202020421  202020422  101010423  202020424  101010425  10101000023350
426  202020427  101010428  101010429  101010430  101010431  10101000023400
501  202020502  101010503  101010504  101010601  101010602  10101000023450
603  101010604  101010605  101010606  101010607  101010608  10101000023500
609  101010610  101010701  101010702  101010703  101010704  10101000023550
705  101010706  101010707  101010708  101010709  101010801  10101000023600
802  101010803  202020804  101010901  101010902  101010903  10101000023650
904  101010905  101010906  101010907  1020201001 1010101002 10101000023700
1003 1010101004 1010101005 1010101006 1010101007 1010101008 10101000023750
1009 1010101010 1010101011 1010101012 101010                            00023800
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 43    FUNCTION   FN46,L106 AVUM OFF AC MEMT, AVUM R&R MFMT                  00023850
101 23031 102  63118 103   1481  104   43233 105  11035 106  11042 00023900
107 13016 108  17008 109  15029 110   37048 111  14029 201  30021 00023950
202 18049 203  44033 301   8020 302      56 303  15116 304  14024500024000
305 140106306  55132 307  42015 308   18018 309  33029 310  18049 00024050
311 20070 312  21045 313  13014 314   28029 315  23011 401     44 00024100
402    35 403  40025 404   1021 405   17037 406   1023 407     33 00024150
408    21 409     35 410     38 411    9031 412  21011 413  85205 00024200
414 23015 415  50018 416    136 417      16 418     25 419     43 00024250
420 26050 421   9019 422   8010 423   10077 424     40 425  17042 00024300
426 60024 427     46 428     28 429   25032 430  13049 431     40 00024350
501 15035 502  15022 503  15058 504   18025 601   9016 602   6008 00024400
603 31017 604  32013 605   9016 606   11011 607  20009 608  11016 00024450
609 13023 610   1015 701   1021 702   55013 703   5009 704  10024 00024500
705 28021 706  20012 707  23007 708    1009 709   6009 801  19025 00024550
802 21018 803 185345804  25059 901   10013 902  13011 903  33046 00024600
904 17007 905  22025 906  23016 907   25044 1001 20004 1002  4006 00024650
1003 4003 1004 12006 1005  4019 1006  12004 1007 25008 1008 20006 00024700
1009 29011 1010 25011 1011 6007 1012  12004                       00024750
 44    FUNCTION   P22,D106 TEST HOP REQUIRED?                          00024800
101   0   102   0   103   0   104   0   105   0   106   0          00024850
107   0   108   0   109   0   110   0   111   0   201   0          00024900
202   0   203   0   301   0   302   0   303   1   304   1          00024950
305   1   306   0   307   0   308   0   309   0   310   1          00025000
311   1   312   1   313   0   314   1   315   0   401   1          00025050
402   1   403   0   404   0   405   0   406   0   407   1          00025100
408   1   409   1   410   0   411   1   412   0   413   1          00025150
414   0   415   1   416   1   417   0   418   0   419   0          00025200
420   1   421   1   422   0   423   1   424   0   425   0          00025250
426   1   427   0   428   0   429   1   430   1   431   1          00025300
501   1   502   0   503   1   504   1   601   0   602   0          00025350
603   0   604   0   605   0   606   0   607   0   608   0          00025400
609   0   610   0   701   0   702   0   703   0   704   0          00025450
705   0   706   0   707   0   708   0   709   0   801   0          00025500
802   0   803   0   804   1   901   0   902   0   903   0          00025550
904   0   905   0   906   0   907   0  1001   0  1002   0          00025600
1003  0  1004   0  1005   0  1006   0  1007   0  1008   0          00025650
1009  0  1010   0  1011   0  1012   0                              00025700
 45    FUNCTION   P22,D106 NORS DELAY                                  00025750
101  15   102  15   103  15   104  15   105  15   106  15          00025800
107  15   108  15   109  25   110 240   111 240   201  10          00025850
202  10   203  10   301 120   302 360   303 360   304 360          00025900
305 240   306 240   307  15   308 110   309 110   310  10          00025950
311  10   312  10   313  10   314  15   315 240   401 240          00026000
402  10   403  15   404  15   405  15   406  15   407 120          00026050
408 120   409 120   410 120   411 120   412  10   413 100          00026100
414  10   415  50   416  50   417  50   418  10   419  10          00026150
420  20   421  15   422 120   423  15   424  60   425  20          00026200
426  10   427  30   428  10   429  40   430  40   431  40          00026250
501  30   502  10   503  15   504  15   601  20   602  20          00026300
603  20   604  20   605  20   606  20   607  20   608  20          00026350
609  20   610  20   701  10   702  10   703  10   704  10          00026400
705  10   706  10   707  20   708  10   709  10   801  30          00026450
802  30   803  30   804  30   901 100   902  50   903  20          00026500
904  30   905  10   906  10   907  10  1001  10  1002  10          00026550
1003 10  1004  10  1005  10  1006  10  1007  10  1008  10          00026600
1009 10  1010  10  1011  10  1012  10                              00026650
 46    FUNCTION   P22,D106 ELEMENT TABLE CODE                          00026700
101   1   102   2   103   3   104   4   105   5   106   6          00026750
107   7   108   8   109   9   110  10   111  11   201  12          00026800
202  13   203  14   301  15   302  16   303  17   304  18          00026850
305  19   306  20   307  21   308  22   309  23   310  24          00026900
311  25   312  26   313  27   314  28   315  29   401  30          00026950
402  31   403  32   404  33   405  34   406  35   407  36          00027000
408  37   409  38   410  39   411  40   412  41   413  42          00027050
414  43   415  44   416  45   417  46   418  47   419  48          00027100
420  49   421  50   422  51   423  52   424  53   425  54          00027150
426  55   427  56   428  57   429  58   430  59   431  60          00027200
501  61   502  62   503  63   504  64   601  65   602  66          00027250
603  67   604  68   605  69   606  70   607  71   608  72          00027300
609  73   610  74   701  75   702  76   703  77   704  78          00027350
705  79   706  80   707  81   708  82   709  83   801  84          00027400
802  85   803  86   804  87   901  88   902  89   903  90          00027450
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904   91    905   92    906   93    907   94    1001  95    1002  96    00027500
1003  97    1004  98    1005  99    1006  100   1007  101   1008  102   00027550
1009  103   1010  104   1011  105   1012  106                             00027600
 47    FUNCTION    FN46,L106 PROB EL REP, MEMT AVIM RP                    00027650
101   990044102   998050103   10481 104   998108105   998034106   99807100027700
107   950026108   998049109   990063110   990133111   990026201   99002200027750
202   990017203   950044301   990019302   950215303   950049304   94618000027800
305   950180306   990053307   990019308   990032309   990022310   99002600027850
311   990035312   990030313   990013314   990013315   998018401   1000  00027900
402   1000  403   998030404   1001  405   998023406   50010 407   99827500027950
408   998030409   1000  410   1000  411   998022412   998011413   99011100028000
414   990000415   998085416   1000  417   1000  418   1000  419   1000  00028050
420   998033421   998028422   998010423   990040424   990038425   10015 00028100
425   998053427   10000 428   10011 429   998035430   998023431   99802800028150
501   990020502   10021 503   990010504   1055  601   5007  602   99800800028200
603   100011604   100011605   100013606   50010 607   50010 608   50010 00028250
609   990013610   50001 701   5001  702   998032703   95000 4704  1010  00028300
705   998015706   990010707   950025708   990005709   500005801   99001400028350
802   990020803   950185804   990030901   500010902   890010903   99004000028400
904   990013905   508037906   998011907   9980261001  9980151002  99800600028450
1003  9980051004  9980141005  9500061006  9900141007  9980101008  99801100028500
1009  9960171010  9980121011  9980081012  998014                          00028550
 48    FUNCTION    P22,D2 PROB OF CANNIBALIZATION                         00028600
101   999   1012  999                                                     00028650
 49    FUNCTION    FN46,L106 MEMT DEPOT REPAIR                            00028700
101   0     102   0     103   0     104   0     105   0     106   0       00028750
107   0     108   0     109   0     110   0     111   130   201   0       00028800
202   0     203   0     301   0     302   115   303   3450  304   3000    00028850
305   300   306   800   307   0     308   0     309   0     310   0       00028900
311   160   312   180   313   0     314   0     315   0     401   0       00028950
402   0     403   300   404   0     405   0     406   0     407   0       00029000
408   1000  409   100   410   80    411   687   412   0     413   0       00029050
414   0     415   100   416   0     417   0     418   0     419   0       00029100
420   0     421   210   422   0     423   0     424   0     425   0       00029150
426   240   427   0     428   0     429   180   430   100   431   80      00029200
501   0     502   0     503   0     504   0     601   0     602   0       00029250
603   0     604   0     605   0     606   0     607   0     608   0       00029300
609   0     610   0     701   0     702   0     703   0     704   0       00029350
705   0     706   0     707   0     708   0     709   0     801   0       00029400
802   0     803   0     804   0     901   0     902   0     903   0       00029450
904   0     905   0     906   0     907   0     1001  0     1002  0       00029500
1003  0     1004  0     1005  0     1006  0     1007  0     1008  0       00029550
1009  0     1010  0     1011  0     1012  0                               00029600
 50    FUNCTION    FN46,L106 MPR OFF AC RPR AVIM,DEPOT                    00029650
101   10000 102   10000 103   10000 104   10000 105   10000 106   10000 00029700
107   10000 108   10000 109   10000 110   10000 111   10020 201   10000 00029750
202   10000 203   10000 301   10000 302   10020 303   20040 304   20030 00029800
305   20020 306   20020 307   20000 308   10000 309   10000 310   10000 00029850
311   10010 312   10020 313   10000 314   10000 315   10000 401   20000 00029900
402   20000 403   10020 404   10000 405   10000 406   20000 407   20000 00029950
408   20010 409   10020 410   10010 411   30030 412   10000 413   20000 00030000
414   10000 415   20010 416   20000 417   10000 418   10000 419   10000 00030050
420   20000 421   20020 422   10000 423   20000 424   10000 425   10000 00030100
426   20020 427   10000 428   10000 429   10020 430   10010 431   10010 00030150
501   20000 502   10000 503   10000 504   10000 601   10000 602   10000 00030200
603   10000 604   10000 605   10000 606   10000 607   10000 608   10000 00030250
609   10000 610   10000 701   10000 702   10000 703   10000 704   10000 00030300
705   10000 706   10000 707   10000 708   10000 709   10000 801   10000 00030350
802   10000 803   20000 804   10000 901   10000 902   10000 903   10000 00030400
904   10000 905   10000 906   10000 907   10000 1001  10000 1002  10000 00030450
1003  10000 1004  10000 1005  10000 1006  10000 1007  10000 1008  10000 00030500
1009  10000 1010  10000 1011  10000 1012  10000                           00030550
 52    FUNCTION    FN46,L106 PROB AVUM RPR/R&R, PROB AVIM RPR/RCD          00030600
101   405999102   1999  103   55999 104   361999105   545999106   490999000030650
107   533999108   383999109   341999110   226999111   371841201   65199900030700
202   901999203   933999301   720999302   625533303   26077 304   26077 00030750
305   200875306   196751307   851999308   716999309   736999310   49699900030800
311   333500312   221742313   958999314   881999315   960999401   51199900030850
402   641999403   250079404   500999405   600999406   600999407   35599900030900
408   340515409   258999410   788999411   64    412   873999413   15199900030950
414   856999415   533571416   81999 417   966999418   371999419   99699900031000
420   281999421   656726422   923999423   848999424   658999425   84899900031050
426   341848427   768999428   600999429   123149430   296857431   71067 00031100
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501   423999502   376999503   711999504   863999601   568999602   94699900031150
603   966999604   918999605   881999606   648999607   448999608   63899900031200
609   883999610   478999701   986999702   706999703   540999704   65699900031250
705   638999706   846999707   751999708   983999709   863999801   93399900031300
802   741999803   480999804   871999901   461999902   556999903   60099900031350
904   286999905   831999906   353999907   8689991001  95999 1002  34899900031400
1003  68999 1004  1259991005  5789991006  8959991007  1369991008  29899900031450
1009  1889991010  3669991011  91999 1012  95999                   00031500
 53    FUNCTION   FN46,L106 MEMT ON AC REPAIR                     00031550
101   87000 102   21000 103   35000 104   40000 105   36000 106   45000 00031600
107   14000 108   32000 109   78000 110   62000 111   49000 201   30000 00031650
202   56000 203   28000 301   16000 302   15000 303   36000 304   18000 00031700
305   109000306   92000 307   17000 308   5000  309   32000 310   26000 00031750
311   28000 312   25000 313   1000  314   27000 315   59000 401   26000 00031800
402   0     403   53000 404   0     405   0     406   23000 407   75000 00031850
408   85000 409   0     410   20000 411   33000 412   22000 413   36000 00031900
414   11000 415   71000 416   0     417   4000  418   35000 419   26000 00031950
420   29000 421   13000 422   8000  423   45000 424   38000 425   63000 00032000
426   13000 427   26000 428   35000 429   25000 430   47000 431   42000 00032050
501   20000 502   29000 503   55000 504   8000  601   9000  602   7000  00032100
603   13000 604   30000 605   10000 606   20000 607   13000 608   22000 00032150
609   23000 610   19000 701   25000 702   28000 703   13000 704   10000000032200
705   18000 706   63000 707   13000 708   7000  709   8000  801   12000 00032250
802   44000 803   10000 804   10000 901   32000 902   10000 903   42000 00032300
904   31000 905   10000 906   17000 907   27000 1001  3000  1002  17000 00032350
1003  30000 1004  35000 1005  23000 1006  9000  1007  17000 1008  15000 00032400
1009  22000 1010  10000 1011  6000  1012  9000                    00032450
 54    FUNCTION   FN46,L106 MPR CN AC RPR 2MOS, 1MOS               00032500
101   1010  102   1010  103   1010  104   1010  105   1010  106   1010  00032550
107   1010  108   1010  109   1010  110   2020  111   2020  201   2020  00032600
202   2020  203   2020  301   2020  302   2020  303   2020  304   2020  00032650
305   2020  306   2020  307   2020  308   1010  309   1010  310   1010  00032700
311   1010  312   1010  313   1010  314   1010  315   1010  401   2020  00032750
402   0     403   1010  404   0     405   0     406   2020  407   2020  00032800
408   2020  409   0     410   1010  411   3030  412   1010  413   2020  00032850
414   1010  415   2020  416   0     417   1010  418   1010  419   1010  00032900
420   2020  421   2020  422   1010  423   2020  424   1010  425   1010  00032950
426   2020  427   1010  428   1010  429   1010  430   1010  431   1010  00033000
501   2020  502   1010  503   1010  504   1010  601   1010  602   1010  00033050
603   1010  604   1010  605   1010  606   1010  607   1010  608   1010  00033100
609   1010  610   1010  701   1010  702   1010  703   1010  704   1010  00033150
705   1010  706   1010  707   1010  708   1010  709   1010  801   1010  00033200
802   1010  803   2020  804   1010  901   1010  902   1010  903   1010  00033250
904   1010  905   2020  906   1010  907   1010  1001  1010  1002  1010  00033300
1003  1010  1004  1010  1005  1010  1006  1010  1007  1010  1008  1010  00033350
1009  1010  1010  1010  1011  1010  1012  1010                    00033400
 55    FUNCTION   P1,E3 SORT FN ON AC REPAIR                      00033450
1     V136  2     V137  3     V138                                00033500
       INITIAL   XH78,1586                                        00033550
       INITIAL   MX1(1,2),158                                     00033600
       INITIAL   MX1(1,3),240                                     00033650
       INITIAL   MX1(1,10),3                                      00033700
       INITIAL   MX1(1,8),100                                     00033750
       INITIAL   MX1(4,6),999999                                  00033800
       INITIAL   MX1(4,10),1                                      00033850
(11)   INITIAL   MX1(5,1),43680                                   00033900
       INITIAL   MX1(5,9),1                                       00033950
       INITIAL   MX1(2,3),30                                      00034000
       INITIAL   MX1(3,3),100                                     00034050
       INITIAL   MX3(1,4),68                                      00034100
       INITIAL   MX3(1,1),80                                      00034150
       INITIAL   MX3(2,1),80  SECOND SHIFT                        00034200
       INITIAL   MX3(3,2),160 WORKING INTERVAL                    00034250
       INITIAL   MX3(3,3),80  NON-WORKING                         00034300
       INITIAL   MX3(3,4),70                                      00034350
       INITIAL   MX3(2,2),1200                                    00034400
       INITIAL   MX3(2,3),480                                     00034450
```

11. Initializes simulation interval for 4368.0 hours (182 days).

```
INITIAL    MH1(1-4,5),1                                          00034500
INITIAL    MH1(1,10),3                                           00034550
INITIAL    MH1(2,10),3                                           00034600
INITIAL    MH1(3,10),3                                           00034650
INITIAL    MH1(4,10),3                                           00034700
INITIAL    MH1(1,11),73                                          00034750
INITIAL    MH1(2,11),20                                          00034800
INITIAL    MH1(3,11),20                                          00034850
INITIAL    MH1(4,11),20                                          00034900
INITIAL    MH1(2,12),107                                         00034950
INITIAL    MH1(1,12),4                                           00035000
INITIAL    MH1(3,12),3                                           00035050
INITIAL    MH1(8,12),5                                           00035100
INITIAL    MH1(1,15),1                                           00035150
INITIAL    MH1(1-2,16),2                                         00035200
INITIAL    MH1(1,21),5                                           00035250
INITIAL    MH1(6,17),1200                                        00035300
INITIAL    MH1(6,18),480                                         00035350
INITIAL    MH6(26,1),300                                         00035400
INITIAL    MH6(26,2),1200                                        00035450
INITIAL    MH6(26,3),1200                                        00035500
INITIAL    MH6(26,4),1200                                        00035550
INITIAL    MH6(26,5),1200                                        00035600
INITIAL    MH6(26,6),1200                                        00035650
INITIAL    MH6(27,1),303                                         00035700
INITIAL    MH6(27,2),403                                         00035750
INITIAL    MH6(27,3),407                                         00035800
INITIAL    MH6(27,4),408                                         00035850
INITIAL    MH6(27,5),416                                         00035900
INITIAL    MH6(27,6),423                                         00035950
INITIAL    X189,3000                                             00036000
INITIAL    X190,999999                                           00036050
INITIAL    X191,3                                                00036100
INITIAL    X192,5                                                00036150
INITIAL    X193,480                                              00036200
INITIAL    X194,3                                                00036250
INITIAL    X197,6                                                00036300
INITIAL    X1630,K0    COST SWITCH, X1630=1 BYPASS COST          00036350
```

(12)

12. Fullword Savevalue 1630 acts as a switch which permits or prevents the use of the cost logic. The RMS costs are determined when X1630=0, and the logic is bypassed when X1630=1.

```
*                                                                    00036400
*                                                                    00036450
COST  GENERATE   1,,,1,126                                           00036500
      TEST NE    X1630,K1,CST5                                       00036550
      LOAD       MCOST                                               00036600
      HELPA      MCOST,X1601,X1602,X1603,X1604,X1605,X1606           00036650
CST5  TERMINATE                                                      00036700
*                                                                    00036750
*                                                                    00036800
*                                                                    00036850
*                                                                    00036900
*                                                                    00036950
* MISSION GENERATOR ROUTINE                                         00037000
*                                                                    00037050
*   SCHEDULED MISSION SUBROUTINE                                     00037100
*                                                                    00037150
*                                                                    00037200
 ZZA   GENERATE   ,,2,1,50,25,F                                      00037250
       SPLIT      1,DLCA,,25                                        00037300
       SPLIT      1,RPCA,,25                                        00037350
       SPLIT      1,FTA,,25                                         00037400
       SPLIT      1,DCRA,,25                                        00037450
*                                                                    00037500
*                                                                    00037550
 SMGF  ASSIGN     9+,K1                                             00037600
 SMGG  ADVANCE    MH1(*9,11)                                        00037650
       TEST E     P9,1,SMGT                                         00037700
       SPLIT      1,SACA,,25                                        00037750
 SMGT  ASSIGN     2,5                                               00037800
 SMGB  TEST GE    MH1(*9,V1),K1,SMGE                                00037850
```

13. A single transaction is generated at time 1 with a priority of 126. The transaction enables the Fortran subroutine MCOST to be loaded and initialized before the actual simulation begins.

14. This check determines whether the cost logic is to be used during execution. If the cost logic is not used, then the transaction branches to CST5.

15. This LOAD block makes the MCOST module core resident for the duration of the simulation.

16. This HELPA block calls for the MCOST routine which then sets the arrays to zero and reads the cost input data cards.

17. The transaction is terminated at this block.

```
         ASSIGN     3,MH1(*9,V1)                                    00037900
         ASSIGN     4,MH1(*9,*2)                                    00037950
         LOOP       2,SMGC                                          00038000
SMGD     SPLIT      1,SMGH,,25                                      00038050
SMGE     GATE LR    2,SMGQ                                          00038100
         TEST E     P9,MH1(1,12),SMGF                               00038150
         ADVANCE    MH1(2,12)                                       00038200
         ASSIGN     9,K1                                            00038250
         GATE LR    1                                               00038300
         TRANSFER   ,SMGG                                           00038350
SMGC     SPLIT      1,SMGH,,25                                      00038400
         TRANSFER   ,SMGB                                           00038450
SMGH     GATE LR    V8,SMGQ                                         00038500
         GATE LR    1,SMGQ                                          00038550
         GATE LR    2,SMGQ                                          00038600
         ASSIGN     2+,K1                                           00038650
         ASSIGN     6,C1                                            00038700
         SPLIT      1,SMGR,,25                                      00038750
         SAVEVALUE  P4+,P3,H                                        00038800
SMGN     ALTER      16,ALL,7,P6,15,1                                00038850
         ALTER      16,ALL,8,*4,15,1                                00038900
SMGK     UNLINK     1,PLAB,1,11,P4,SMGJ                             00038950
         LOOP       3,SMGK                                          00039000
SMGQ     TERMINATE                                                  00039050
SMGJ     ASSIGN     1+,K1                                           00039100
         TEST E     P1,K6,SMGL                                      00039150
         TEST E     P11,K0,SMGM                                     00039200
         MARK       7                                               00039250
         ASSIGN     11,1                                            00039300
         ASSIGN     8,MH1(3,12)                                     00039350
SMGM     ADVANCE    1                                               00039400
         TEST G     MP7,P8,SMGP                                     00039450
         UNLINK     4,ARM37,1,,,ARM39                               00039500
         SPLIT      1,ARM40,,60                                     00039550
         ASSIGN     3-,1                                            00039600
ARM39    SAVEVALUE  V5+,P3,H                                        00039650
         TRANSFER   ,SMGQ                                           00039700
SMGL     ASSIGN     4,FN1                                           00039750
         TRANSFER   ,SMGK                                           00039800
SMGP     ASSIGN     1,K0                                            00039850
         ASSIGN     4,MH1(*9,*2)                                    00039900
         TRANSFER   ,SMGN                                           00039950
SMGR     ADVANCE    MH1(8,12)                                       00040000
         BUFFER                                                     00040050
         LOGICS     V6                                              00040100
         LOGICS     19                                              00040150
         ADVANCE    MH1(P4,21)                                      00040200
         BUFFER                                                     00040250
         LOGICR     V6                                              00040300
         LOGICR     19                                              00040350
         TRANSFER   ,SMGQ                                           00040400
*                                                                   00040450
*                                                                   00040500
*                                                                   00040550
*                                                                   00040600
*   FLYING TERMINATION SUBROUTINE                                   00040650
*                                                                   00040700
FTA      PRIORITY   80                                              00040750
         SPLIT      1,FTH,,25                                       00040800
         SPLIT      4,FTB,2,25                                      00040850
FTB      ASSIGN     3,MH1(*2,14)                                    00040900
         TEST GE    P3,K1,SMGQ                                      00040950
         ASSIGN     4,MH1(*2,13)                                    00041000
         ADVANCE    V9                                              00041050
FTC      LOGICS     1                                               00041100
         SPLIT      1,FTF,,25                                       00041150
         ADVANCE    P4                                              00041200
         UNLINK     2,SMGQ,1                                        00041250
         UNLINK     2,FTD,1,,,FTF                                   00041300
         TRANSFER   ,FTG                                            00041350
FTF      LOGICR     1                                               00041400
FTG      ADVANCE    P3                                              00041450
         TRANSFER   ,FTC                                            00041500
```

```
FTF     LINK        2,FIFC                                                  00041550
FTD     TRANSFER    ,FTF                                                    00041600
FTH     ASSIGN      1,MX1(4,6)                                              00041650
        TEST NE     P1,K0,SMGQ                                              00041700
        SPLIT       1,FTR,,25                                               00041750
FTJ     TEST GE     XH11,P1,FTK                                             00041800
        LOGICS      2                                                       00041850
        LOGICS      1                                                       00041900
        TERMINATE                                                           00041950
FTK     ADVANCE     20                                                      00042000
        TRANSFER    ,FTJ                                                    00042050
FTR     SPLIT       1,FTL,,25                                               00042100
        SPLIT       1,FTT,,25                                               00042150
        SPLIT       4,FTX,11,25                                             00042200
FTX     ASSIGN      9,MH1(V2,16)                                            00042250
        TEST GE     P9,K1,SMGQ                                              00042300
        ASSIGN      1,V3                                                    00042350
        ASSIGN      6,MH1(V2,17)                                            00042400
        LOGICS      V7                                                      00042450
        ADVANCE     MH1(V2,16)                                              00042500
FTZ     LOGICR      V7                                                      00042550
        ADVANCE     P6                                                      00042600
        LOGICS      V7                                                      00042650
        ADVANCE     P9                                                      00042700
        GATE LR     *1,SMGQ                                                 00042750
        TRANSFER    ,FTZ                                                    00042800
FTL     SPLIT       4,FTP,11,25                                             00042850
FTP     ASSIGN      9,MH1(V2,14)                                            00042900
        TEST GE     P9,K1,SMGQ                                              00042950
        ASSIGN      1,V3                                                    00043000
        ASSIGN      8,V4                                                    00043050
FTN     TEST GE     XH*8,P9,FTM                                             00043100
        LOGICS      V7                                                      00043150
        LOGICS      *1                                                      00043200
        TERMINATE                                                           00043250
FTM     ADVANCE     10                                                      00043300
        TRANSFER    ,FTN                                                    00043350
FTT     SPLIT       4,FTS,11,25                                             00043400
FTS     ASSIGN      9,MH1(V2,15)                                            00043450
        TEST GE     P9,K1,SMGQ                                              00043500
        LOGICS      V7                                                      00043550
        ADVANCE     P9                                                      00043600
        LOGICR      V7                                                      00043650
        TERMINATE                                                           00043700
*                                                                           00043750
*                                                                           00043800
*                                                                           00043850
*                                                                           00043900
* AIRCRAFT ROUTINE                                                          00043950
*                                                                           00044000
*                                                                           00044050
*       AIRCRAFT COMPLEMENT SUBROUTINE                                      00044100
*                                                                           00044150
*                                                                           00044200
*                                                                           00044250
*                                                                           00044300
*                                                                           00044350
ZZB     GENERATE    ,,1,X191,90,60,F   GENERAL                              00044400
        ADVANCE     69      THIS CARD IS 2ND OF AC COMP SUBROUTINE          00044450
        ASSIGN      47,V10                                                  00044500
AAA     JOIN        25                                                      00044550
        ASSIGN      41,V11                                                  00044600
        ASSIGN      40,V231                                                 00044650
        ASSIGN      14,N$AAA                                                00044700
        MSAVEVALUE  6,25,P14,P40,H                                          00044750
        TEST NF     P15,K0,NOTBC    IF NO TBU ITEMS GO TO NOTBO             00044800
        SAVEVALUE   17+,K1,H                                                00044850
        ASSIGN      15,X197         ASSIGN VO. TBU ITEMS TO P15             00044900
ARM.6   MSAVEVALUE  6,P14,P15,V146,H                                        00044950
        LOOP        15,ARM16                                                00045000
NOTBO   JOIN        16                                                      00045050
        JOIN        23                                                      00045100
```

```
AAC     ASSIGN      15,1                                                00045150
        TEST NE     P35,999,HLH2   INSURES AGAINST 2ND PMI              00045200
        TEST L      V147,V234,ARM17                                     00045250
        TES. L      V148,V235,ARM19                                     00045300
HLH2    JOIN        29                                                  00045350
        ASSIGN      35,K0                                               00045400
AAD     LINK        1,FIFO                                              00045450
AAB     TEST NE     P16,K2,AAF                                          00045500
        ASSIGN      16,K0                                               00045550
AAF     PRIORITY    90                                                  00045600
        TRANSFER    ,AAC                                                00045650
* THIS CARD WAS REMOVE BECAUSE IT WAS NO LONGER NECESSARY               00045700
ARM17   ASSIGN      15,K0                                               00045750
        JOIN        30                                                  00045800
        ASSIGN      17,17                                               00045850
        SAVEVALUE   V169+,K1                                            00045900
        SAVEVALUE   V170+,K1                                            00045950
        SAVEVALUE   450+,K1                                             00046000
        SAVEVALUE   1050+,K1                                            00046050
        TRANSFER    ,ARM18                                              00046100
ARM19   ASSIGN      15,K0                                               00046150
        JOIN        37                                                  00046200
        ASSIGN      17,8                                                00046250
        SAVEVALUE   V165+,K1                                            00046300
        SAVEVALUE   V166+,K1                                            00046350
        SAVEVALUE   400+,K1                                             00046400
        SAVEVALUE   1000+,K1                                            00046450
        TRANSFER    ,ARM23                                              00046500
*                                                                       00046550
*                                                                       00046600
*                                                                       00046650
*                                                                       00046700
*         STANDBY AIRCRAFT SUBROUTINE                                   00046750
*                                                                       00046800
SACA    PRIORITY    70                                                  00046850
        ASSIGN      4,K0                                                00046900
        SPLIT       4,SACB,4,25                                         00046950
SACB    ASSIGN      3,MH1(*4,15)                                        00047000
        GATE LR     V8,SMGQ                                             00047050
        TEST GE     P3,K1,SMGQ                                          00047100
SACG    EXECUTE     SMGH                                                00047150
        ASSIGN      2,P4                                                00047200
SACE    ALTER       16,ALL,8,*4,15,1                                    00047250
        GATE LR     1,SMGQ                                              00047300
        TEST E      BV3,1,SMGQ                                          00047350
SACC    UNLINK      1,PLAA,1,,,SACD                                     00047400
        LOOP        3,SACC                                              00047450
        TERMINATE                                                       00047500
SACD    ASSIGN      1+,K1                                               00047550
        TEST GE     P1,K6,SACF                                          00047600
        ASSIGN      4,P2                                                00047650
        ASSIGN      1,K0                                                00047700
        ADVANCE     1                                                   00047750
        TRANSFER    ,SACE                                               00047800
SACF    ASSIGN      4,FN1                                               00047850
        TRANSFER    ,SACC                                               00047900
SACH    ASSIGN      4,P8                                                00047950
        REMOVE      32                                                  00048000
        ASSIGN      1,K0                                                00048050
        ASSIGN      3,1                                                 00048100
        TRANSFER    ,SACG                                               00048150
ARM40   ASSIGN      8,K1                                                00048200
        TRANSFER    ,SACH                                               00048250
*                                                                       00048300
*                                                                       00048350
*                                                                       00048400
*   AIRCRAFT MAINLINE SUBROUTINE                                        00048450
*                                                                       00048500
*                                                                       00048550
*     PRELAUNCH LOOP                                                    00048600
*                                                                       00048650
PLAA    ASSIGN      16,1                                                00048700
PLAB    ASSIGN      15,2                                                00048750
```

```
        TEST F      P16,K0,ARM41                                00048800
        SAVEVALUE   V151+,K1                                    00048850
        SAVEVALUE   225+,K1                                     00048900
        SAVEVALUE   V152+,K1                                    00048950
        SAVEVALUE   825+,K1                                     00049000
ARM41   REMOVE      29                                          00049050
        JOIN        28                                          00049100
PLAT    ASSIGN      19,K0                                       00049150
        ASSIGN      17,MH1(*8,16)                               00049200
        TEST NE     P8,P11,PLAG                                 00049250
        ASSIGN      9,K1                                        00049300
PLAG    ASSIGN      1,MH1(*8,22)                                00049350
PLAX    ASSIGN      19,P17                                      00049400
        TEST E      P17,K1,PLAC                                 00049450
        TRANSFER    .*1,PLAH,PLAC                               00049500
PLAC    TRANSFER    SBR,LIA,5                                   00049550
        TEST LE     V13,FN2,PLAK                                00049600
PLAH    LOOP        17,PLAX                                     00049650
PLAN    ASSIGN      17,5                                        00049700
        ENTER       1                                           00049750
        ADVANCE     MH1(6,13)                                   00049800
        TABULATE    3                                           00049850
        TEST LE     V13,FN2,PLAL                                00049900
PLAJ    TEST NE     P16,K1,PLAD                                 00049950
PLAF    ENTER       2                                           00050000
        GATE LS     V14                                         00050050
PLAQ    REMOVE      28                                          00050100
        MARK                                                    00050150
        UNLINK      3,TSTHA,ALL,12,P12                          00050200
        LEAVE       2                                           00050250
        GATE LR     V15,PLAM                                    00050300
        TRANSFER    ,FLTA                                       00050350
PLAM    LEAVE       1                                           00050400
        TRANSFER    ,AAB                                        00050450
PLAK    ASSIGN      19,P17                                      00050500
        REMOVE      28                                          00050550
        ASSIGN      18,PLAR                                     00050600
        TRANSFER    ,CMA                                        00050650
PLAL    ASSIGN      19,P17                                      00050700
        REMOVE      28                                          00050750
        ASSIGN      18,PLAS                                     00050800
        TRANSFER    ,CMA                                        00050850
PLAD    JOIN        27                                          00050900
        REMOVE      28                                          00050950
        ASSIGN      15,K37                                      00051000
        LINK        4,FIFO                                      00051050
PLAE    REMOVE      27                                          00051100
        ASSIGN      15,K2                                       00051150
        SPLIT       1,SACH,,60                                  00051200
        JOIN        28                                          00051250
        TRANSFER    ,PLAF                                       00051300
PLAR    JOIN        28                                          00051350
        TRANSFER    ,PLAH                                       00051400
PLAS    JOIN        28                                          00051450
        TRANSFER    ,PLAJ                                       00051500
ARM37   ASSIGN      16,K0                                       00051550
        SAVEVALUE   V151+,K1                                    00051600
        SAVEVALUE   V152+,K1                                    00051650
        SAVEVALUE   225+,K1                                     00051700
        SAVEVALUE   825+,K1                                     00051750
        TRANSFER    ,PLAN                                       00051800
*                                                               00051850
*                                                               00051900
*                                                               00051950
*                                                               00052000
*                                                               00052050
*                                                               00052100
*     FLIGHT LOOP                                               00052150
*                                                               00052200
FLTA    JOIN        26                                          00052250
FLTL    TABULATE    2                                           00052300
        ENTER       V14                                         00052350
        TEST LE     P8,K5,FLTE                                  00052400
```

```
        TEST LF     V13,FN3,FLTC                                    00052450
        SAVEVALUE   V16+,K1,H                                       00052500
FLTD    ADVANCE     FN4                                             00052550
        TEST G      P8,K0,ARM42                                     00052600
        SAVEVALUE   V153+,K1                                        00052650
        SAVEVALUE   250+,K1                                         00052700
        SAVEVALUE   V154+,K1                                        00052750
        SAVEVALUE   850+,K1                                         00052800
        SAVEVALUE   V155+,FN4                                       00052850
        SAVEVALUE   275+,FN4                                        00052900
        SAVEVALUE   V156+,FN4                                       00052950
        SAVEVALUE   875+,FN4                                        00053000
        ASSIGN      40+,FN4                                         00053050
FLTH    LEAVE       V14                                             00053100
        ASSIGN      16,K0                                           00053150
        TEST LE     P8,K5,FLTK                                      00053200
FLTG    SAVEVALUE   V17+,M1,H                                       00053250
        SAVEVALUE   11+,M1,H                                        00053300
        SAVEVALUE   7+,M1                                           00053350
        ASSIGN      11,P8                                           00053400
        LEAVE       1                                               00053450
        PRIORITY    20,BUFFER                                       00053500
        PRIORITY    90                                              00053550
        REMOVE      26                                              00053600
        REMOVE      34                                              00053650
*                                                                   00053700
        TEST G      P19,5,AAB                                       00053750
        ASSIGN      18,AAB                                          00053800
        TRANSFER    ,CMA                                            00053850
ARM42   SAVEVALUE   V205+,1                                         00053900
        SAVEVALUE   775+,1                                          00053950
        SAVEVALUE   V207+,FN4                                       00054000
        SAVEVALUE   1450+,FN4                                       00054050
        SAVEVALUE   V204+,1                                         00054100
        SAVEVALUE   1375+,1                                         00054150
        SAVEVALUE   V206+,FN4                                       00054200
        SAVEVALUE   1550+,FN4                                       00054250
        ASSIGN      40+,FN4                                         00054300
        TRANSFER    ,FLTH                                           00054350
FLTC    TEST LE     V13,FN5,FLTJ                                    00054400
        ASSIGN      19,6                                            00054450
        TRANSFER    ,FLTD                                           00054500
FLTJ    ASSIGN      19,7                                            00054550
        TRANSFER    .999,FLTF,FLTE                                  00054600
FLTF    UNLINK      4,FLTB,1,8,P8                                   00054650
FLTE    ADVANCE     V18                                             00054700
        TEST G      P8,K0,HLH3                                      00054750
        TEST L      V147,V234,HLH21                                 00054800
        TEST L      V148,V235,HLH21                                 00054850
        TRANSFER    ,HLH22                                          00054900
HLH21   ASSIGN      35,999                                          00054950
HLH22   SAVEVALUE   V208+,1                                         00055000
        SAVEVALUE   V209+,1                                         00055050
        SAVEVALUE   V210+,V18                                       00055100
        SAVEVALUE   V211+,V18                                       00055150
        SAVEVALUE   1475+,1                                         00055200
        SAVEVALUE   1575+,1                                         00055250
        SAVEVALUE   1500+,V18                                       00055300
        SAVEVALUE   1600+,V18                                       00055350
        ASSIGN      40+,V18                                         00055400
        TRANSFER    ,FLTH                                           00055450
HLH3    SAVEVALUE   799+,K1                                         00055500
        ASSIGN      40+,V18                                         00055550
        TEST L      V147,V234,HLH5   GENERAL ROUTINE TO             00055600
        TEST L      V148,V235,HLH5   INSURE AGAINST DOING           00055650
        TRANSFER    ,FLTH            AN EXTRA PMP OR PMI            00055700
HLH5    ASSIGN      35,999           AFTER AN ABORTED               00055750
        TRANSFER    ,FLTH            TEST HOP.                      00055800
FLTB    SPLIT       1,SACH,,60                                      00055850
        ADVANCE     MH1(7,13)                                       00055900
        ASSIGN      40+,MH1(7,13)                                   00055950
        MARK                                                        00056000
        ASSIGN      8+,K6                                           00056050
        TRANSFER    ,FLTA                                           00056100
```

```
TSTHP  ASSIGN     8,K0                                              00056150
       GATE LR    1,AAB                                             00056200
       JOIN       34                                                00056250
       MARK       6                                                 00056300
       ENTER      1                                                 00056350
       GATE LS    19                                                00056400
       LINK       3,FIFO                                            00056450
       SPLIT      1,TSTHB,,60                                       00056500
TSTHB  TEST E     BV2,0,TSTHC                                       00056550
       ADVANCE    V19                                               00056600
TSTHC  UNLINK     3,TSTHA,ALL                                       00056650
       TERMINATE                                                    00056700
TSTHA  MARK                                                         00056750
       TRANSFER   ,FLTL                                            00056800
UNLK   TRANSFER   P,21                                              00056850
FLTK   ASSIGN     8-,K6                                             00056900
       TRANSFER   ,FLTG                                            00056950
*                                                                   00057000
*                                                                   00057050
*      POST FLIGHT LOOP                                             00057100
*                                                                   00057150
PFAG   TEST E     P19,K0,PFAF                                       00057200
PFAE   TEST E     BV2,K1,PFAA                                       00057250
       ASSIGN     17,K12                                            00057300
       JOIN       28                                                00057350
       ASSIGN     16,K2                                             00057400
       TRANSFER   SBR,LIA,5                                         00057450
       REMOVE     28                                                00057500
       TEST LE    V13,FN2,PFAD                                      00057550
PFAC   TRANSFER   ,AAB                                              00057600
PFAF   ASSIGN     18,PFAE                                           00057650
       TRANSFER   ,CMA                                             00057700
PFAA   ASSIGN     18,AAB                                            00057750
PFAB   ASSIGN     17,11                                             00057800
       JOIN       35                                                00057850
       TRANSFER   SBR,LIA,5                                         00057900
       REMOVE     35                                                00057950
       TRANSFER   P,18                                              00058000
PFAD   ASSIGN     19,12                                             00058050
       ASSIGN     16,K0                                             00058100
       ASSIGN     18,PFAC                                           00058150
       TRANSFER   ,CMA                                              00058200
*                                                                   00058250
*                                                                   00058300
*                                                                   00058350
*                                                                   00058400
* PREVENTIVE MAINTENANCE ROUTINE                                    00058450
*                                                                   00058500
*                                                                   00058550
*   DAILY INSPECTION SUBROUTINE                                     00058600
*                                                                   00058650
DLCA   PRIORITY   40                                                00058700
       ASSIGN     2,MX1(1,3)                                        00058750
       TEST GE    P2,K1,SMGQ                                        00058800
       ADVANCE    MX1(1,2)                                          00058850
ARM36  ASSIGN     3,X192    GENERAL - NC WORK DAYS/WK               00058900
DLCB   GATE LR    1,DLCC                                            00058950
DLCD   UNLINK     1,DLB,ALL                                         00059000
       UNLINK     4,DLA,ALL                                         00059050
       ASSIGN     14,K0                                             00059100
DLCE   ADVANCE    P2                                                00059150
       LOOP       3,DLCB                                            00059200
       ADVANCE    X193      WAITS FOR WEEK-END                      00059250
       TRANSFER   ,ARM36                                            00059300
       TRANSFER   ,DLCB                                             00059350
DLCC   ASSIGN     14+,K1                                            00059400
       TEST E     V21,K0,DLCE                                       00059450
       TRANSFER   ,DLCD                                             00059500
DLA    ASSIGN     16,K0                                             00059550
       REMOVE     27                                                00059600
       LEAVE      1                                                 00059650
       ASSIGN     19,K0                                             00059700
DLB    ASSIGN     17,16                                             00059750
```

```
        REMOVE      29                                                  00059600
        ASSIGN      16,K0                                               00059850
        ASSIGN      15,2                                                00059900
        TRANSFER    ,DLH                                                00059950
DLH     ASSIGN      17,K16                                              00060000
DLE     TEST LE     P24,MX1(4,10),RLARA                                 00060050
        JOIN        33                                                  00060100
        TRANSFER    SBR,LIA,5                                           00060150
DLD     ADVANCE     K0                                                  00060200
        REMOVE      33                                                  00060250
        TEST GE     V148,V235,DLC  LOGIC CHANGE TO FLAG A/C             00060300
        ASSIGN      35,999         THAT HAVE JUST HAD A PMI             00060350
DLC     TEST G      V13,FN2,AAB                                         00060400
        ASSIGN      19,P17                                              00060450
        ASSIGN      18,AAB                                              00060500
        TRANSFER    ,CMA                                                00060550
*                                                                       00060600
*                                                                       00060650
*   LINE MAINTENANCE SUBROUTINE                                         00060700
*                                                                       00060750
LIA     QUEUE       P17                                                 00060800
        ASSIGN      22,V23                                              00060850
        ASSIGN      2,V24                                               00060900
        TEST NE     P22,K0,LMM                                          00060950
        MARK                                                            00061000
        ENTER       V26                                                 00061050
        QUEUE       V27                                                 00061100
LMI     GATE LR     20,LMB                                              00061150
LMF     ASSIGN      3,V28                                               00061200
        ASSIGN      4,K0                                                00061250
LMD     TEST GE     R*3,P22,LMG                                         00061300
        DEPART      V27                                                 00061350
        DEPART      P17                                                 00061400
        ENTER       *3,P22                                              00061450
        ASSIGN      20,V25                                              00061500
        ADVANCE     P20                                                 00061550
        TEST NE     P17,K2,ARM30                                        00061600
        TEST NE     P17,K16,ARM31                                       00061650
ARM32   LEAVE       *3,P22                                              00061700
        LEAVE       V26                                                 00061750
        TABULATE    3                                                   00061800
        MSAVEVALUE  2+,P2,P17,V29                                       00061850
(18)    MSAVEVALUE  7+,P2,P17,K1,H                                      00061900
        SAVEVALUE   V30+,V29                                            00061950
        SAVEVALUE   20+,V2                                              00062000
        UNLINK      V31,U   ,ALL                                        00062050
        TRANSFER    P,5,1                                               00062100
ARM30   SAVEVALUE   V157+,K1                                            00062150
        SAVEVALUE   300+,K1                                             00062200
        SAVEVALUE   V158+,K1                                            00062250
        SAVEVALUE   900+,K1                                             00062300
        SAVEVALUE   V159+,V191                                          00062350
        SAVEVALUE   325+,V191                                           00062400
        SAVEVALUE   V160+,V191                                          00062450
        SAVEVALUE   925+,V191                                           00062500
        TRANSFER    ,ARM32                                              00062550
ARM31   SAVEVALUE   V161+,K1                                            00062600
        SAVEVALUE   350+,K1                                             00062
        SAVEVALUE   V162+,K1                                            00062
        SAVEVALUE   950+,K1                                             00062
        SAVEVALUE   V163+,V191                                          00062800
        SAVEVALUE   375+,V191                                           00062850
        SAVEVALUE   V164+,V191                                          00062900
        SAVEVALUE   975+,V191                                           00062950
        SAVEVALUE   V195+,M1       DAILY ELAPSED TIME                   00063000
        SAVEVALUE   675+,M1        ELAPSED TIME FOR A DAILY             00063050
        TRANSFER    ,ARM32                                              00063100
```

18. This block tabulates the number of pre-flight, post-flight, and daily inspections in Matrix Halfword Savevalue 7.

```
LMB     ASSIGN      3,V27                                                   00063150
        ASSIGN      4,1                                                     00063200
        TRANSFER    ,LMD                                                    00063250
LMG     ASSIGN      21,LME                                                  00063300
        ASSIGN      23,FN7                                                  00063350
        LINK        V31,P23                                                 00063400
LME     TEST E      P16,K0,LMI                                              00063450
        TEST NE     P8,K0,LMI                                               00063500
        TEST NE     P17,K1,LMP                                              00063550
        TEST G      M1,FN8,LMI                                              00063600
LMN     DEPART      V27                                                     00063650
        DEPART      P17                                                     00063700
LML     LEAVE       V26                                                     00063750
        REMOVE      28                                                      00063800
        TRANSFER    ,AAB                                                    00063850
LMM     DEPART      P17                                                     00063900
        TRANSFER    P,5,1                                                   00063950
LMP     TEST G      MC7,FN8,LMI                                             00064000
        TRANSFER    ,LMN                                                    00064050
*                                                                           00064100
*     PMP-PMI SUBROUTINE                                                    00064150
*                                                                           00064200
*                                                                           00064250
ARM18   ASSIGN      12,X197          ASSIGN NO.  TBC ITEMS TO P12           00064300
        TEST NE     P12,K0,PMCY      IF NC TBU ITEMS GO TO PMCY             00064350
ARM22   TEST G      V149,X189,ARM24                                         00064400
ARM21   LOOP        12,ARM22                                                00064450
PMCY    ADVANCE                                                             00064500
ARM23   PRIORITY    20,BUFFER                                               00064550
        MARK                                                                00064600
        ASSIGN      35,999                                                  00064650
        ASSIGN      26,K0                                                   00064700
        ASSIGN      15,2                                                    00064750
        ASSIGN      21,PMCH                                                 00064800
        ASSIGN      23,FN7                                                  00064850
        ASSIGN      2,K0                                                    00064900
        SPLIT       1,PMCF,,60                                              00064950
        QUEUE       P17                                                     00065000
        ENTER       V26                                                     00065050
        DEPART      P17                                                     00065100
        SPLIT       1,PMCG,,60                                              00065150
        SPLIT       1,PMCR,,60                                              00065200
PMCH    ASSEMBLE    13                                                      00065250
        PRIORITY    90                                                      00065300
        LEAVE       V26                                                     00065350
        TABULATE    3                                                       00065400
        REMOVE      30                                                      00065450
        REMOVE      37                                                      00065500
        TEST NE     P17,K17,PMCZ                                            00065550
        TEST E      P17,K8,ARM33                                            00065600
ARM33   SPLIT       1,REEG                                                  00065650
        TEST LE     V13,FN2,HLH1     LOGIC TO DETECT                        00065700
        ASSIGN      27,K0            FAILURES AT PMI AND                    00065750
        TEST E      P24,K0,RLARA     DO AWAY WITH TSHMPS                    00065800
        TRANSFER    ,AAB             AFTER PMI                              00065850
PMCAA   TEST LE     V13,FN2,PMCS                                            00065900
        TEST E      P24,K0,PMCT                                             00065950
        TRANSFER    ,ARRG                                                   00066000
HLH1    ASSIGN      19,P17                                                  00066050
        ASSIGN      25,K1                                                   00066100
        ASSIGN      27,K0                                                   00066150
        TRANSFER    ,CMA                                                    00066200
PMCZ    SPLIT       1,REAA,,60                                              00066250
        TRANSFER    ,PMCAA                                                  00066300
PMCS    ASSIGN      19,P17                                                  00066350
        ASSIGN      25,K1                                                   00066400
        ASSIGN      27,K1                                                   00066450
        TRANSFER    ,CMA                                                    00066500
PMCT    ASSIGN      27,K1                                                   00066550
        TRANSFER    ,RLARA                                                  00066600
PMCF    LINK        27,FIFO                                                 00066650
PMCG    ADVANCE     MX1(1,V32)                                              00066700
        UNLINK      27,SMGQ,1,14,P14                                        00066750
        TRANSFER    ,PMCP                                                   00066800
```

```
PMCR   SPLIT          10,PMCU,2,60                                00066850
PMCU   ASSIGN         3,MX1(V33,*2)                               00066900
       TEST GE        P3,K1,PMCM                                  00066950
       ASSIGN         4,MX1(V34,*2)                               00067000
       TEST E         P17,K8,ARM34                                00067050
       SAVEVALUE      V167+,V36                                   00067100
       SAVEVALUE      V168+,V36                                   00067150
       SAVEVALUE      425+,V36                                    00067200
       SAVEVALUE      1025+,V36                                   00067250
PMCV   GATE LR        29                                          00067300
       BUFFER                                                     00067350
       QUEUE          V27                                         00067400
PMCH   GATE LR        20,PMCJ                                     00067450
       ASSIGN         7,V28                                       00067500
       ASSIGN         20,V35                                      00067550
       ASSIGN         8,1                                         00067600
PMCK   TEST GE        R*7,P3,PMCL                                 00067650
PMCO   TEST LE        P4,P20,PMCN                                 00067700
PMCQ   DEPART         V27                                         00067750
       ENTER          *7,P3                                       00067800
       ADVANCE        P4                                          00067850
       LEAVE          *7,P3                                       00067900
       UNLINK         P7,UNIK,ALL                                 00067950
(19)   MSAVEVALUE     2+,P2,P17,V36                               00068000
       TEST E         P26,K0,BYP2                                 00068050
(20)   MSAVEVALUE     7+,P2,P17,K1,H                              00068100
BYP2   SAVEVALUE      V37+,V36                                    00068150
(21)   SAVEVALUE      32+,V36                                     00068200
       TEST E         P26,K0,PMCP                                 00068250
       TRANSFER       ,PMCM                                       00068300
ARM34  TEST E         P17,K17,PMCV                                00068350
       SAVEVALUE      V171+,V36                                   00068400
       SAVEVALUE      V172+,V36                                   00068450
       SAVEVALUE      475+,V36                                    00068500
       SAVEVALUE      1075+,V36                                   00068550
       TRANSFER       ,PMCV                                       00068600
PMCJ   ASSIGN         7,V27                                       00068650
       ASSIGN         8,K0                                        00068700
       ASSIGN         20,V38                                      00068750
       TRANSFER       ,PMCK                                       00068800
PMCN   ASSIGN         22,V39                                      00068850
       ASSIGN         4,P20                                       00068900
       ASSIGN         26,K1                                       00068950
       TEST E         P4,K0,PMCQ                                  00069000
       DEPART         V27                                         00069050
PMCP   ASSIGN         4,P22                                       00069100
       PRIORITY       1,BUFFER                                    00069150
       PRIORITY       20                                          00069200
       ASSIGN         26,K0                                       00069250
       TRANSFER       ,PMCV                                       00069300
PMCL   LINK           P7,P23                                      00069350
ARM24  SPLIT          1,ARM20                                     00069400
       TRANSFER       ,ARM21                                      00069450
*                                                                 00069500
*                                                                 00069550
```

19. The transaction is checked to determine whether it has been previously tallied. If P26=1, the inspection has been continued from the previous shift and the transaction branches to BYP2.

20. This block tabulates the number of PMI and PMP inspections in Matrix Halfword Savevalue 7.

21. This block was modified to include the label BYP2.

```
*      TIME CHANGE OVERHAUL ,RETIREMENT SUBROUTINE                    00069600
*                                                                     00069650
*                                                                     00069700
 ARM20 ASSIGN      22,MH6(27,P12)                                     00069750
       MSAVEVALUE  6,*14,*12,V150,H                                   00069800
       ASSIGN      12,1                                               00069850
       ASSIGN      6,9                                                00069900
       ASSIGN      25,K1359                                           00069950
       ASSIGN      17,19                                              00070000
       MSAVEVALUE  5+,V46,*6,K1,H                                     00070050
       SAVEVALUE   V175+,K1                                           00070100
       SAVEVALUE   525+,K1                                            00070150
       SAVEVALUE   V176+,K1                                           00070200
       SAVEVALUE   1125+,K1                                           00070250
       TRANSFER    ,MPAA                                              00070300
*                                                                     00070350
*                                                                     00070400
*                                                                     00070450
*                                                                     00070500
* FAILURE DETERMINATION ROUTINE                                       00070550
*                                                                     00070600
 CMA   ASSIGN      2,FN9                                              00070650
       TABULATE    4                                                  00070700
*                                                                     00070750
 FDA   ASSIGN      24+,K1                                             00070800
       ASSIGN      3,FN15                                             00070850
       TABULATE    5                                                  00070900
       TABULATE    6                                                  00070950
       SAVEVALUE   V173+,K1                                           00071000
       SAVEVALUE   500+,K1                                            00071050
       SAVEVALUE   V174+,K1                                           00071100
       SAVEVALUE   1100+,K1                                           00071150
       SAVEVALUE   V41+,K1,H                                          00071200
       ASSIGN      4,K23                                              00071250
       SAVEVALUE   1,RN2                                              00071300
       ASSIGN      5,FN22                                             00071350
       MSAVEVALUE  2,2,1,0,H                                          00071400
 FDB   ASSIGN      22,V42                                             00071450
       TEST NE     P5,K1,ARM54                                        00071500
       MSAVEVALUE  2+,2,1,FN*4,H                                      00071550
 ARM55 TEST LE     X1,MH2(2,1),FDD                                    00071600
       TABULATE    7                                                  00071650
       SPLIT       1,FDK,,60                                          00071700
       TEST E      P19,K7,FDL                                         00071750
       ASSIGN      19,6                                               00071800
 FDC   ASSIGN      25,K1                                              00071850
 FDF   LOOP        2,FDA                                              00071900
       TEST E      P25,K1,FDN                                         00071950
       TEST E      BV18,1,RLARA                                       00072000
       UNLINK      4,ARM37,1,,,ARM38                                  00072050
       SPLIT       1,ARM40,,60                                        00072100
 ARM38 TEST E      P19,K5,RLARA                                       00072150
       SAVEVALUE   33+,K1                                             00072200
       TRANSFER    ,RLARA                                             00072250
 FDD   LOOP        5,FDB                                              00072300
 FDL   TRANSFER    ,FDF                                               00072350
       TEST G      RN3,FN30,FDC                                       00072400
 FDR   GATE LS     1,FDF                                              00072450
       TRANSFER    ,FDC                                               00072500
 FDN   TEST NE     P27,K1,FDM                                         00072550
       ASSIGN      25,K0                                              00072600
       ASSIGN      19,K0                                              00072650
       TRANSFER    P,18                                               00072700
 FDK   LINK        32,FIFO                                            00072750
 ARM54 MSAVEVALUE  2,2,1,999,H                                        00072800
       TRANSFER    ,ARM55                                             00072850
 FDM   ASSIGN      27,K0                                              00072900
       TEST F      P35,999,ARM56                                      00072950
       ASSIGN      35,0                                               00073000
       TRANSFER    ,TSTHP                                             00073050
 FDP   TEST L      RN3,V135,FDF                                       00073100
       TRANSFER    ,FDC                                               00073150
```

```
ARM56  TEST L     V147,V234,ARM17   GENERAL                    00073200
       TEST L     V148,V235,ARM19   GENERAL                    00073250
       TRANSFER   ,TSTHP                                       00073300
*                                                              00073350
*                                                              00073400
*                                                              00073450
*                                                              00073500
* REPAIR LOCATION AND RESPOT SUBROUTINE                        00073550
*                                                              00073600
 RLARA JOIN       32                                          00073650
       TEST F     P19,K5,RLARB                                00073700
       LEAVE      1                                           00073750
 RLARB TEST E     P16,K1,RLARC                                00073800
       SPLIT      1,SACH,,60                                  00073850
 RLARC TEST E     BV1,K1,RLARD                                00073900
       ASSIGN     18,RLARK                                    00073950
       TRANSFER   ,PFAB                                       00074000
 RLARD MARK                                                   00074050
 RLARK TEST E     BV2,K1,RLARE                                00074100
       TEST E     BV7,K0,RLARE                                00074150
       ASSIGN     18,V44                                      00074200
       TEST L     P18,MX1(4,2),RLARL                          00074250
       ASSIGN     18,MX1(4,2)                                 00074300
 RLARL ADVANCE    P18                                         00074350
       SAVEVALUE  34+,M1                                      00074400
 RLARE PRIORITY   80,BUFFER                                   00074450
       PRIORITY   90                                          00074500
       UNLINK     32,USMA,ALL,14,P14,AAB                      00074550
       ASSIGN     20,K123                                     00074600
       ASSIGN     24+,K1                                      00074650
       REMOVE     32                                          00074700
       SPLIT      1,RLARH,,60                                 00074750
       TRANSFER   ,AKRA                                       00074800
 RLARH PRIORITY   110,BUFFER                                  00074850
       SPLIT      1,RLARG,,60                                 00074900
 RLARF JOIN       32                                          00074950
       ASSEMBLE   P24                                         00075000
       SAVEVALUE  V187+,M1                                    00075050
       SAVEVALUE  625+,M1                                     00075100
       SAVEVALUE  V186+,M1                                    00075150
       SAVEVALUE  1225+,M1                                    00075200
       SAVEVALUE  35+,M1                                      00075250
       SAVEVALUE  V195+,M1                                    00075300
       SAVEVALUE  675+,M1                                     00075350
       SAVEVALUE  V194+,M1                                    00075400
       SAVEVALUE  1275+,M1                                    00075450
       SCAN       40,14,P14,,,RLARM                           00075500
       REMOVE     32                                          00075550
       JOIN       31                                          00075600
 RLARN MATCH      RLARP                                       00075650
       TERMINATE                                              00075700
 RLARG JOIN       40                                          00075750
       ASSEMBLE   P24                                         00075800
       SAVEVALUE  36+,M1                                      00075850
       REMOVE     40                                          00075900
 RLARP MATCH      RLARN                                       00075950
       JOIN       32                                          00076000
 RLARQ MATCH      ARRJ                                        00076050
 RLARM TERMINATE                                              00076100
*                                                             00076150
*                                                             00076200
*                                                             00076250
*                                                             00076300
*        REPAIR PART ASSESSMENT SUBROUTINE                    00076350
*                                                             00076400
 USMA  PRIORITY   60,BUFFER                                   00076450
       MARK                                                   00076500
       ASSIGN     18,K0                                       00076550
       ASSIGN     25,V45                                      00076600
 RPAB  TRANSFER   .*25,RPAD,RPAA                              00076650
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 RPAA  ADVANCE     MX1(4,8)                                          00076700
       ASSIGN      25,K1359                                          00076750
       MSAVEVALUE  5+,V46,2,1,H                                      00076800
       SAVEVALUE   175+,K1                                           00076850
       TEST LE     RM1,FN38,NURCA                                    00076900
 RPAC  TRANSFER    ,MPAA                                             0007695C
 RPAD  MSAVEVALUE  5+,V46,1,1,H                                      00077000
       SAVEVALUE   176+,K1                                           00077050
*                                                                    00077100
*                                                                    00077150
*   MANPOWER ASSESSMENT SUBROUTINE                                   00077200
*                                                                    00077250
 MPAA  ASSIGN      1,K3                                              00077300
 MPAB  ASSIGN      V47,FN39                                          00077350
       TEST E      P25,1359,ARM1                                     00077400
       ASSIGN      V51,FN41                                          00077450
       TRANSFER    ,ARM2                                             00077500
 ARM1  ASSIGN      V51,FN55                                          0007755C
 ARM2  LOOP        1,MPAB                                            00077600
*                                                                    00077650
*                                                                    00077700
*   MTTR SUBROUTINE                                                  0007775C
*                                                                    00077800
 ARM3  TEST E      P25,K1359,ARM4                                    00077850
 MTRA  ASSIGN      4,V55                                             00077900
       TRANSFER    ,ARM5                                             00077950
 ARM4  ASSIGN      4,V138                                            00078000
 ARM5  TABULATE    8                                                 00078050
*  THESE CARDS HAD PUT A MIN REPAIR TIME IN P4                       00078100
*                                                                    00078150
*                                                                    00078200
*   GSE SUBROUTINE                                                   0007825C
*                                                                    00078300
 GSEA  TRANSFER    ,UNSA                                             00078350
 GSEB  ASSIGN      1,V57                                             00078400
       ADVANCE     P1                                                00078450
       SAVEVALUE   37+,P1                                            00078500
*                                                                    00078550
*                                                                    00078600
*                                                                    00078650
* UNSCHEDULED MAINTENANCE ROUTINE                                    00078700
*                                                                    00078750
*                                                                    00078800
 UNSA  TEST NE     P17,K19,ARM25                                     00078850
       ASSIGN      17,K23                                            00078900
 ARM25 TEST E      P27,K0,UNSB                                       00078950
 UNSJ  ASSIGN      3,P29                                             00079000
       ASSIGN      2,P26                                             00079050
       ASSIGN      26,K0                                             00079100
 UNSK  GATE LR     29                                                00079150
       BUFFER                                                       00079200
       QUEUE       V27                                               00079250
       QUEUE       25                                                00079300
 UNSE  GATE LR     20,UNSC                                           00079350
       ASSIGN      7,V28                                             00079400
       ASSIGN      20,V35                                            00079450
       ASSIGN      8,1                                               00079500
 UNSD  TEST GE     R*7,P3,UNSP                                       00079550
       TEST LE     P4,P2C,UNSF                                       00079600
 UNSG  DEPART      V27                                               00079650
       DEPART      25                                                00079700
       ENTER       *7,P3                                             00079750
       ADVANCE     P4                                                00079800
       TEST NE     BV17,K1,ARM14                                     00079850
 ARM15 LEAVE       *7,P3                                             00079900
       UNLINK      P7,UNLK,ALL                                       00079950
       MSAVEVALUE  2+,P2,P17,V36                                     00080000
*                                                                    00080050
```

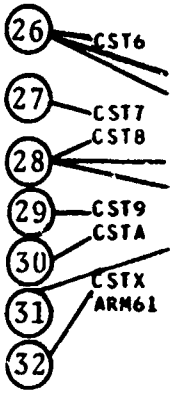
```
* COST LOGIC FOR AVUM REMOVE-REPLACE , ON A/C REPAIR AND AVUM OFF      00080100
  A/C REPAIR
(22)*                                                                  00080150
CSTO  TEST NE     X1630,K1,CSTX     CHK COST BYPASS                    00080200
(23)  TEST NE     V36,K0,CSTX       CHK FOR NO MMH                     00080250
                                                                       00080300
*                                                                      00080350
*                                                                      00080400
CST1  SAVEVALUE   1601,V46          SYSTEM NO.                         00080450
(24)  SAVEVALUE   1602,FN46         COMPONENT NO.                      00080500
      SAVEVALUE   1603,P2           MOS NO.                            00080550
      TEST E      P17,18,CST6                                          00080600
(25)  SAVEVALUE   1604,K3           AVUM OFF A/C REPAIR -- CODE = 3    00080650
      TRANSFER    ,CST8                                                00080700
```

22. This check determines whether the cost logic is being employed (X1630=1). When the cost logic is not being used, the transaction branches to CSTX.

23. This test determines whether there were maintenance manpower hours associated with the action; if not, the transaction branches to CSTX and no accounting is done.

24. The subsystem component and MOS numbers for the maintenance action are assigned to Savevalues 1601 to 1603.

25. This logic determines whether the maintenance action is off aircraft repair (P17=18). Off aircraft repair transactions have their action code set to 3 (X1604=3), and the transaction then branches to CST8.



```
CST6   TEST F      P25,K1359,CST7                                    00080750
       SAVEVALUE   1604,K2          REMOVE-REPLACE ACTION -- CODE = 2 00080800
       TRANSFER    ,CST8                                             00080850
CST7   SAVEVALUE   1604,K1          ON A/C REPAIR -- CODE = 1         00080900
CST8   TEST F      BV10,K1,CST9     CHK FOR PREV. COUNTED EVENT       00080950
       SAVEVALUE   1605,K999        SUPPRESS EVENT COUNTER IN MCOST   00081000
       TRANSFER    ,CSTA                                             00081050
CST9   SAVEVALUE   1605,P17         P17 = 19, 23 OR 18                00081100
CSTA   SAVEVALUE   1606,V36         MMH                               00081150
       HELPA       MCOST,X1601,X1602,X1603,X1604,X1605,X1606         00081200
CSTX   TEST NE     P17,K19,ARM10                                     00081250
ARM61  SAVEVALUE   V58+,V36                                          00081300
       SAVEVALUE   49+,V36                                           00081350
       SAVEVALUE   V189+,V36                                         00081400
       SAVEVALUE   575+,V36                                          00081450
       SAVEVALUE   V190+,V36                                         00081500
       SAVEVALUE   1175+,V36                                         00081550
       TEST NE     P12,K1,ARM57                                      00081600
       MSAVEVALUE  5+,V46,V59,V36                                    00081650
```

26. This logic determines whether the maintenance action is a remove and replace (P25=1359). Remove and replace events have their action code set to 2 (X1604=2), and the transaction branches to CST8.

27. Maintenance actions which are on aircraft repair have their action code set to 1 (X1604=1).

28. This test determines whether the transaction was previously tallied. Transactions which represent secondary work centers (P26=1) or multiple-shift action (P5=9999) are tallied when the initial transaction was passed to MCOST. The Savevalue 1605 is set to 999 when BV10=1, and in the MCOST subroutine only the man-hours are tabulated.

29. When the Boolean Variable 10 is equal to zero, Savevalue 1605 is set to P17. P17=19 represents a time change component, P17=18 represents off aircraft repair, and P17=23 represents remove/replace or on aircraft repair.

30. The maintenance man-hours for the event are assigned to Savevalue 1606.

31. This HELPA block passes to MCOST the Savevalues 1601 to 1606. The subroutine tabulates the AVUM maintenance man-hours and when applicable (1605=999) the event. The events which are tabulated by the RMS logic in Matrix Halfword Savevalue 5 may not be equal to those in Table V, Subsystem Maintenance Action, since MH5 events are counted before the Unscheduled Maintenance routine and the simulation may terminate before the transaction is passed to MCOST for accounting.

32. This block was modified to include the label CSTX.

```
ARM58  TEST E      P26,K0,UNSH                                          00081700
       TEST NE     P5,K9999,CANN                                        00081750
       TEST NE     P12,1,CANN                                           00081800
       TEST E      P25,K1359,UNSL                                       00081850
       SPLIT       1,IMAA,,60                                           00081900
UNSL   TEST E      P18,K0,UNSM                                          00081950
       SPLIT       1,RLARF,,60                                          00082000
       SPLIT       1,RLARG,,60                                          00082050
UNSM   TRANSFER    ,ARRA                                                00082100
ARM10  MSAVEVALUE  5+,V46,*6,V36                                        00082150
       SAVEVALUE   V222+,V36                                           00082200
       SAVEVALUE   550+,V36                                            00082250
       SAVEVALUE   V223+,V36                                           00082300
       SAVEVALUE   1150+,V36                                           00082350
       TEST E      P26,K0,UNSH                                         00082400
       TERMINATE                                                       00082450
UNSB   SPLIT       1,UNSN,,60                                           00082500
       TRANSFER    ,UNSJ                                               00082550
UNSN   ASSIGN      5,K9999                                              00082600
       ASSIGN      3,P30                                               00082650
       ASSIGN      2,P27                                               00082700
       ASSIGN      26,K0                                               00082750
       TRANSFER    ,UNSK                                               00082800
ARM14  ADVANCE     P19                                                  00082850
       ASSIGN      26,0                                                00082900
       ASSIGN      4+,P19                                              00082950
       SAVEVALUE   108+,P19                                            00083000
(33)   TEST NE     X1630,K1,OTBP                                        00083050
*                                                                       00083100
* CALL MCOST TO ADD OVERTIME RESIDUALS TO TOTAL AVUM SUBSYSTEM COST     00083150
*                                                                       00083200
(34)   SAVEVALUE   1601,V46                                             00083250
       SAVEVALUE   1602,FN46                                           00083300
       SAVEVALUE   1603,P2                                             00083350
(35)   SAVEVALUE   1604,K9                                             00083400
(36)   SAVEVALUE   1605,K0                                             00083450
```

33. This check determines whether the cost logic is being employed (X1630=1).

34. The subsystem, component, and MOS numbers for overtime are assigned to Savevalues 1601, 1602, and 1603, respectively.

35. This block sets the overtime action code to 9 (X1604=9).

36. Savevalue 1605 is not used in the overtime logic of the MCOST subroutine.

```
(37)     SAVEVALUE  1606,V244                                                    00083500
(38)     HELPA      MCOST,X1601,X1602,X1603,X1604,X1605,X1606                    00083550
         *                                                                       00083600
         *                                                                       00083650
         *                                                                       00083700
         *                                                                       00083750
(39) OTBP MSAVEVALUE 2+,P2,20,V244     ACCUMULATE OT MMH BY MCS IN .01 HRS      00083800
         TRANSFER   ,ARM15                                                     00083850
     UNSC ASSIGN    7,V27                                                     00083900
         ASSIGN     20,V38                                                    00083950
         ASSIGN     8,K0                                                      00084000
         TRANSFER   ,UNSD                                                     00084050
     UNSP ASSIGN    23,FN7                                                    00084100
         ASSIGN     21,UNSE                                                   00084150
         LINK       P7,P23                                                    00084200
     UNSF ASSIGN    19,V39                                                    00084250
         ASSIGN     4,P20                                                     00084300
         ASSIGN     26,K1                                                     00084350
         TEST E     P4,K0,UNSG                                                00084400
         DEPART     V27                                                       00084450
         DEPART     25                                                        00084500
         PRIORITY   1,BUFFER                                                  00084550
         TEST NE    P12,K1,ARM11                                              00084600
         PRIORITY   60                                                        00084650
     UNSH ASSIGN    4,P19                                                     00084700
         ASSIGN     26,K0                                                     00084750
         TEST NE    V35,0,ARM59                                               00084800
         TEST E     P4,K0,UNSK                                                00084850
         TRANSFER   ,UNSE                                                     00084900
     ARM11 PRIORITY 0                                                        00084950
         TRANSFER   ,UNSH                                                     00085000
     ARM57 MSAVEVALUE 5+,V46,*6,V36                                          00085050
         TRANSFER   ,ARM58                                                    00085100
     ARM59 GATE LS  20                                                       00085150
         QUEUE      25                                                        00085200
         QUEUE      V27                                                       00085250
         DEPART     V27                                                       00085300
         DEPART     25                                                        00085350
         TRANSFER   ,UNSH                                                     00085400
     *                                                                       00085450
     *   AIRCRAFT RELEASE AND REASSEMBLY SUBROUTINE                          00085500
     *                                                                       00085550
     ARRA GATHER    P24                                                       00085600
         PRIORITY   90,BUFFER                                                 00085650
         TEST NE    P20,K123,ARRB                                             00085700
         TEST NE    P8,K0,ARRB                                                00085750
         TEST E     FN44,1,ARRB                                               00085800
         TRANSFER   .533,ARRB,ARRH                                            00085850
     ARRH LOGICS    21                                                        00085900
```

37. The overtime maintenance man-hours (V244) are assigned to Savevalue 1606.

38. This HELPA block passes to MCOST the values in Savevalues 1601 to 1606. The subroutine determines with the overtime factor from the AVUM Input Data Card (Figure 6) whether there is any additional cost to be applied to the AVUM total cost in Table V, Subsystem Maintenance Action.

39. This block was added to tabulate the overtime maintenance man-hours in Matrix Savevalue 2. Overtime man-hours are also included in MX2 (P2,23), unscheduled maintenance.

```
ARRB  ASSEMBLE   P24                                                00085950
ARRJ  MATCH      RLARQ                                              00086000
      ASSIGN     19,KO                                              00086050
      ASSIGN     24,KO                                              00086100
      ASSIGN     20,KO                                              00086150
      ASSIGN     25,KO                                              00086200
      ASSIGN     16,KO                                              0008625C
ARRC  TABULATE   9                                                  00086300
      SAVEVALUE  188+,V60                                           00086350
      TEST E     P27,K1,ARRD                                        00086400
      ASSIGN     27,KO                                              00086450
      TRANSFER   ,ARRE                                              00086500
ARRD  GATE LS    21,ARRF                                            00086550
ARRE  LOGICR     21                                                 0008660C
      TEST NE    P35,999,ARRG                                       00086650
      TEST L     V147,V234,ARM17   GENERAL                          00086700
      TEST L     V148,V235,ARM19   GENERAL                          00086750
*  REMOVED                                                          00086800
ARRG  ASSIGN     17,2                                               00086850
      MARK       44                                                 00086900
      ASSIGN     8,KO                                               00086950
      TRANSFER   SBR,LIA,5                                          00087000
      TEST LE    V13,FN2,AARH                                       00087050
      ASSIGN     35,0                                               00087100
      TRANSFER   ,TSTHP                                             0008715C
ARRF  GATE LR    1,AAB                                              00087200
      TEST NE    P17,K16,AAB                                        00087250
      TEST E     BV11,K1,AAB                                        00087300
      TEST GE    MX1(1,3),K1,AAB                                    00087350
      TRANSFER   ,DL8                                               00087400
AARH  ASSIGN     27,K1                                              00087450
      ASSIGN     19,2                                               00087500
      ASSIGN     19,2                                               00087550
      TRANSFER   ,CMA                                               00087600
*                                                                   00087650
*                                                                   00087700
*                                                                   00087750
*                                                                   00087800
* NORS/CANNIBALIZATION ROUTINE                                      00087850
*                                                                   00087900
NORCA TEST NE    MX1(4,7),K1,NORA                                   00087950
      ASSIGN     1,V61                                              00088000
NORY  TEST LE    RN6,FN48,NORCB                                     00088050
      TABULATE   10                                                 00088100
*                                                                   0008815C
*                                                                   00088200
      ADVANCE    P1                                                 00088250
      TEST E     BV19,K1                                            00088300
      SAVEVALUE  V196+,M1                                           00088350
      SAVEVALUE  1425+,M1                                           00088400
*                                                                   0008845C
      TRANSFER   ,MPAA                                              00088500
NORCB SPLIT      1,NORCD                                            00088550
      TRANSFER   ,NORCE                                             00088600
NORCD ADVANCE    P1                                                 00088650
      TRANSFER   ,CAND                                              00088700
NORA  ASSIGN     23,74                                              00088750
      TEST E     V62,CH28                                           00088800
      TEST E     W$NORL,KO                                          00088850
      ASSIGN     1,KO                                               00088900
      GATE LS    22,NORC                                            00088950
      GATE LR    23                                                 00089000
      SCAN       12,14,P14,,,NORM                                   00089050
      SPLIT      1,NORT,,60                                         00089100
      SPLIT      1,NORS,,60                                         00089150
      SPLIT      1,RLARF,,60                                        00089200
      TRANSFER   ,NORJ                                              00089250
CAND  ASSIGN     17,K22                                             00089300
      TRANSFER   ,CANP                                              00089350
NORT  UNLINK     28,NORL,1,14,P14                                   00089400
NORG  PRIORITY   110                                                00089450
NORN  JOIN       11                                                 00089500
```

```
NORH   LINK         29,FIFO                                    00089550
NORM   LOGICS       23                                         00089600
       TEST E       MSNORL,K0                                  00089650
NORB   UNLINK       28,CANA,1,,,NORE                           00089700
       SAVEVALUE    75,K0,H                                    00089750
       SAVEVALUE    *23,P22,H                                  00089800
       GATE LS      24                                         00089850
       LOGICR       24                                         00089900
       TEST E       XH75,K0,NORB                               00089950
       ASSIGN       1,XH76                                     00090000
       UNLINK       29,CANB,1,14,P1                            00090050
       BUFFER                                                  00090100
NORCE  TABULATE     11                                         00090150
       MSAVEVALUE   5+,V46,2,K1,H                              00090200
       LOGICR       23                                         00090250
       ASSIGN       19,K14                                     00090300
       TABULATE     6                                          00090350
       ASSIGN       1,K5431                                    00090400
CANP   ASSIGN       3,V54                                      00090450
       ASSIGN       2,V50                                      00090500
       ASSIGN       4,V55                                      00090550
       TEST L       P4,K5,CANE                                 00090600
       ASSIGN       4,K5                                       00090650
CANE   QUEUE        V27                                        00090700
       QUEUE        44                                         00090750
CANH   GATE LR      20,CANF                                    00090800
       ASSIGN       7,V28                                      00090850
       ASSIGN       20,V35                                     00090900
       ASSIGN       8,K1                                       00090950
CANG   TEST GE      R*7,P3,CANJ                                00091000
       TEST LE      P4,P20,CANL                                00091050
CANK   DEPART       V27                                        00091100
       DEPART       44                                         00091150
       ENTER        *7,P3                                      00091200
       ADVANCE      P4                                         00091250
       LEAVE        *7,P3                                      00091300
       UNLINK       P7,UNLK,ALL                                00091350
       ASSIGN       17,24                                      00091400
       MSAVEVALUE   2+,P2,P17,V36                              00091450
       SAVEVALUE    V63+,V36                                   00091500
       SAVEVALUE    61+,V36                                    00091550
       MSAVEVALUE   5+,V46,2,V36                               00091600
       TEST E       P26,K0,CANH                                00091650
       TEST E       P1,K5431,CANN                              00091700
       TRANSFER     ,MPAA                                      00091750
NORS   ASSIGN       18,K1                                      00091800
       TABULATE     10                                         00091850
       LINK         30,FIFO                                    00091900
NORC   LOGICS       22                                         00091950
NORD   TABULATE     10                                         00092000
       SPLIT        1,NORG,,60                                 00092050
       SPLIT        1,RLARF,,60                                00092100
       SPLIT        1,NORJ,,60                                 00092150
       ASSIGN       18,K1                                      00092200
NORL   PRIORITY     10,BUFFER                                  00092250
       ASSIGN       2,MX4(1,P14)                               00092300
       JOIN         12                                         00092350
NORF   LINK         20,P2                                      00092400
NORE   LOGICR       23                                         00092450
       BUFFER                                                  00092500
       TRANSFER     ,NORD                                      00092550
CANB   SPLIT        1,NORN,,60                                 00092600
       ASSIGN       22,XH*23                                   00092650
       SPLIT        1,NORN,,60                                 00092700
NORJ   PRIORITY     50                                         00092750
       ASSIGN       1,V61                                      00092800
       ASSIGN       3,V64                                      00092850
       TEST G       P3,MX4(1,P14),NORK                         00092900
       MSAVEVALUE   4,1,*14,*3                                 00092950
NORK   ADVANCE      P1                                         00093000
       ASSIGN       19,K15                                     00093050
       TABULATE     6                                          00093100
       TABULATE     12                                         00093150
```

```
        GATE LR     25                                  00093200
        TEST E      V62,CH28                            00093250
        LOGICS      25                                  00093300
        SAVEVALUE   62,P22                              00093350
        UNLINK      28,NORP,ALL                         00093400
        GATE LR     25                                  00093450
        GATE LS     26,CAND                             00093500
        LOGICR      26                                  00093550
CANN    TERMINATE                                       00093600
CANC    LOGICS      24                                  00093650
        TEST F      P22,XH*23,NORH                      00093700
        SAVEVALUE   75,K1,H                             00093750
        TRANSFER    ,NORH                               00093800
NORQ    JOIN        10                                  00093850
        GATE LR     27                                  00093900
        GATE LS     28,NORR                             00093950
        TEST E      P22,X62,NORR                        00094000
        LOGICR      28                                  00094050
        TERMINATE                                       00094100
NORR    REMOVE      10                                  00094150
        PRIORITY    110                                 00094200
        TRANSFER    ,NORH                               00094250
CANA    ASSIGN      24,XH*23                            00094300
        UNLINK      29,CANC,ALL,14,P14                  00094350
        SAVEVALUE   76,P14,H                            00094400
        PRIORITY    110,BUFFER                          00094450
        GATE LR     23                                  00094500
        TRANSFER    ,NORL                               00094550
NORP    GATE LS     25,NORF                             00094600
        LOGICS      27                                  00094650
        UNLINK      29,NORQ,ALL,14,P14                  00094700
        BUFFER                                          00094750
        SCAN        10,22,X62,,,NORU                    00094800
        LOGICS      28                                  00094850
        LOGICR      27                                  00094900
        LOGICR      25                                  00094950
        TEST E      G10,K1,NORF                         00095000
        ASSIGN      22,X62                              00095050
NORW    LOGICS      26                                  00095100
        SAVEVALUE   63+,M1                              00095150
        SAVEVALUE   V196+,M1                            00095200
        SAVEVALUE   1425+,M1                            00095250
        UNLINK      30,NORX,ALL,14,P14                  00095300
        REMOVE      12                                  00095350
NORX    SPLIT       1,RLARG                             00095400
        TRANSFER    ,MPAA                               00095450
NORU    LOGICR      27                                  00095500
        GATE LR     25                                  00095550
        TRANSFER    ,NORF                               00095600
CANF    ASSIGN      7,V27                               00095650
        ASSIGN      20,V38                              00095700
        ASSIGN      8,K0                                00095750
        TRANSFER    ,CANG                               00095800
CANJ    ASSIGN      23,FN7                              00095850
        ASSIGN      21,CANH                             00095900
        LINK        P7,P23                              00095950
CANL    ASSIGN      19,V39                              00096000
        ASSIGN      4,P20                               00096050
        ASSIGN      26,K1                               00096100
        TEST E      P4,K0,CANK                          00096150
        DEPART      V27                                 00096200
        DEPART      44                                  00096250
        PRIORITY    1,BUFFER                            00096300
        PRIORITY    90                                  00096350
CANM    ASSIGN      4,P19                               00096400
        ASSIGN      26,K0                               00096450
        TRANSFER    ,CANE                               00096500
*                                                       00096550
*                                                       00096600
*                                                       00096650
*                                                       00096700
```

```
*  THREE LEVEL MAINTENANCE -- OFF-AIRCRAFT COMPONENT REPAIR                    00096750
*                                                                             00096800
 IMAA  TABULATE   13          TABULATE PARTS REMOVED & REPLACED               00096850
       TEST LE    RN1,V67,SCRAP  IS PART REPAIRABLE? IF NOT TO SCRAP          00096900
       TEST LE    V139,RN1,ARM6 AVUM REP? IF YES GO TO ARM6                   00096950
       TEST LE    V140,RN1,ARM7 IS REP? IF YES GO TO ARM7                     00097000
       TEST LE    RN1,V71,SCRAP DEPOT REP? IF NO GO TO SCRAP                  00097050
       ASSIGN     4,V68         ASSIGNS REPAIR TIME TO P4                     00097100
       TABULATE   14            TABULATE OFF AC MTTR                          00097150
       ASSIGN     31,V96             ASSIGN DEPOT OFF AC REP MPWR REQ        00097200
       SAVEVALUE  V69+,V70      INCREMENTS DEPOT MMH BY MOS                   00097250
       SAVEVALUE  75+,V70       INCREMENTS TOTAL DEPOT MMH                    00097300
       SAVEVALUE  179+,1        INCREMENTS # PARTS REPAIRED AT DEPOT          00097350
       ASSIGN     6,3           FLAGS AS DEPOT REPAIR                         00097400
 DEPA  TABULATE   15            TABULATES DEPOT REPAIRS                       00097450
 IMAG  MSAVEVALUE 5+,V46,P6,1,M INCREMENTS # REPAIRS BY SUBSYS & M LEV        00097500
       MSAVEVALUE 5+,V46,P6,V70 INCREMENTS MMH REQ BY SUBSYS & M LEVEL       00097550
       SAVEVALUE  V193+,V70                                                  00097600
       SAVEVALUE  650+,V70                                                   00097650
       SAVEVALUE  V192+,V70                                                  00097700
       SAVEVALUE  1250+,V70                                                  00097750
*                                                                            00097800
* COST ROUTINE FOR AVIM REPAIR CODE=04, DEPOT REPAIR CODE=05                  00097850
*                                                                            00097900
       TEST NE    X1630,K1,CST2     CHECK COST BYPASS SWITCH                  00097950
       SAVEVALUE  1601,V46          SYSTEM NO.                                00098000
       SAVEVALUE  1602,FN46         PART NO.                                  00098050
       SAVEVALUE  1603,P28          MOS NO.                                   00098100
       SAVEVALUE  1605,K0                                                     00098150
       SAVEVALUE  1606,V70          MMH                                       00098200
       TEST NE    P6,K8,RIM         CHECK DEPOT OR AVIM REPAIR                00098250
       SAVEVALUE  1604,K5           DEPOT REPAIR CODE=5                       00098300
       TRANSFER   ,CST3                                                       0009835C
```

40. This check determines whether the cost logic is being employed (X1630=1).

41. The subsystem, component, and MOS numbers are assigned to Savevalues 1601, 1602, and 1603, respectively.

42. Savevalue 1605 is not used in the AVIM and Depot cost computations of MCOST.

43. The maintenance man-hours are assigned to Savevalue 1606.

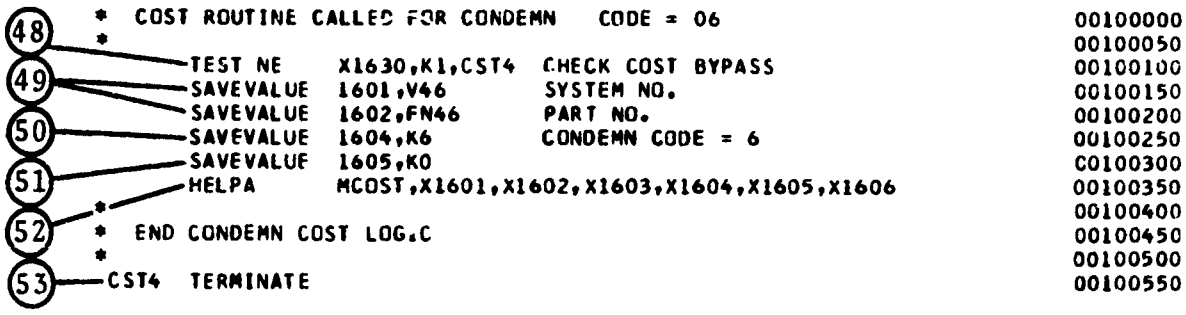
44. This logic determines whether the maintenance action is a depot repair; if so, the action code is set to 5 (X1604=5) and the transaction branches to CST3.

```
(45)  RIM    SAVEVALUE  1604,K4            AVIM REPAIR CODE=4                    00098400
      CST3   HELPA      MCOST,X1601,X1602,X1603,X1604,X1605,X1606                 00098450
(46)  *                                                                          00098500
      *                                                                          00098550
      *                                                                          00098600
(47)  CST2   TERMINATE                                                           00098650
      ARM6   ASSIGN     12,1          FLAGS AVUM REP ITEM                      00098700
             PRIORITY   0             ZEROES PRIORITY                          00098750
             ASSIGN     4,V65         ASSIGNS AVUM REPAIR TIME TO P4           00098800
             TABULATE   14            TABULATE OFF AC MTTR                     00098850
             ASSIGN     29,P31        ASSIGNS OFF EQP MPR REQ                  00098900
             ASSIGN     30,0          NO SECONDARY MANPOWER                    00098950
             TEST E     P28,5,ARM8                                             00099000
             ASSIGN     26,2                                                   00099050
      ARM9   ASSIGN     27,0                                                   00099100
             ASSIGN     17,18         FLAGS AS AVUM OFF-AC REPAIR              00099150
             ASSIGN     6,7           FLAGS AS AVUM OFF-AC REPAIR              00099200
             SAVEVALUE  177+,1        INCREMENTS # PARTS REP AT AVUM           00099250
             MSAVEVALUE 5+,V46,P6,1,H  INCR # PARTS REP AVUM BY SUBSYSTEM      00099300
             TRANSFER   ,UNSJ                                                  00099350
      ARM8   ASSIGN     26,3                                                   00099400
             TRANSFER   ,ARM9                                                  00099450
      ARM7   ASSIGN     4,V141        ASSIGNS IS REPAIR TIME TO P4             00099500
             TABULATE   14            TABULATE OFF AC MTTR                     00099550
             ASSIGN     31,V95             ASSIGN IS OFF AC REP MANPOWER REQ  00099600
             SAVEVALUE  V143+,V70     INCREMENTS IS MMH BY MOS                 00099650
             SAVEVALUE  107+,V70      INCREMENTS TOTAL DEPOT MMH               00099700
             SAVEVALUE  178+,1        INCREMENTS # IS OFF AC REPAIRS           00099750
             ASSIGN     6,8           FLAGS IS OFF AC REPAIR                   00099800
             TRANSFER   ,IMAG         GO DO ACCOUNTING                         00099850
      SCRAP  SAVEVALUE  181+,1        INCREMENT # OF PARTS SCRAPPED            00099900
      *                                                                        00099950
```

45. Maintenance actions which are not depot repairs are AVIM repairs (P6=8). The action code for AVIM is 4 (X1604=4).

46. This HELPA block passes to MCOST the values in Savevalues 1601 to 1606. MCOST computes the maintenance cost and tabulates the event occurrence.

47. This block was modified to include the label CST3.



```
48  *  COST ROUTINE CALLED FOR CONDEMN   CODE = 06                    00100000
    *                                                                 00100050
49      TEST NE     X1630,K1,CST4  CHECK COST BYPASS                  00100100
        SAVEVALUE   1601,V46       SYSTEM NO.                         00100150
50      SAVEVALUE   1602,FN46      PART NO.                           00100200
        SAVEVALUE   1604,K6        CONDEMN CODE = 6                   00100250
51      SAVEVALUE   1605,K0                                           00100300
        HELPA       MCOST,X1601,X1602,X1603,X1604,X1605,X1606         00100350
    *                                                                 00100400
52  *  END CONDEMN COST LOG.C                                         00100450
    *                                                                 00100500
53  CST4  TERMINATE                                                   00100550
```

48. This check determines whether the cost logic is being employed (X1630=1).

49. Savevalues 1601 and 1602 are set to the subsystem number and component number, respectively.

50. Savevalue 1604 is set to the action code for a condemned component (X1604=6).

51. Savevalue 1605 is not required in the logic for condemned components.

52. This HELPA block passes to the MCOST subroutine Savevalues 1601 to 1606. MCOST tabulates the event, the salvage value, and the new part cost.

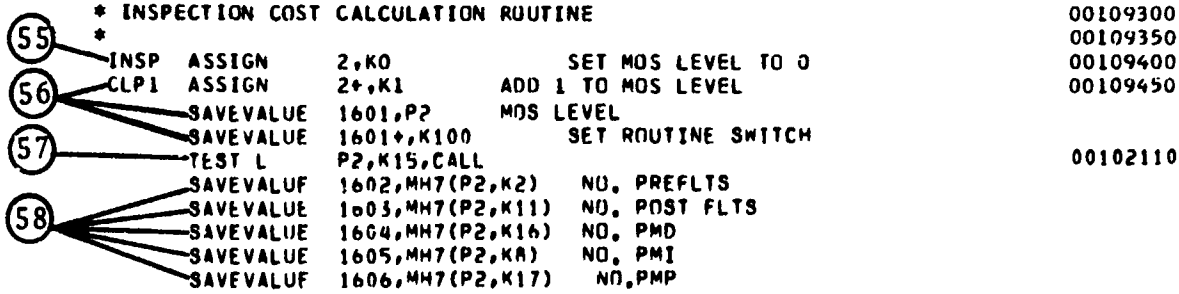
53. This block was modified to include the label CST4.

```
*                                                                    00100600
*                                                                    00100650
*                                                                    00100700
*                                                                    00100750
* MANPOWER CONTROL ROUTINE                                           00100800
*                                                                    00100850
*                                                                    00100900
*   SHIFT TERMINATION SUBROUTINE                                     00100950
*                                                                    00101000
 MPCA  PRIORITY   100                                                00101050
       SPLIT      1,MPCE,,25                                         00101100
       SPLIT      3,MPCB,2,25                                        00101150
 MPCB  ASSIGN     3,MX3(*2,2)                                        00101200
       TEST GE    P3,K1,SMGQ                                         00101250
       ASSIGN     5,MX3(*2,3)                                        00101300
       ADVANCE    V74                                                00101350
 MPCN  ASSIGN     1,K31                                              00101400
       SPLIT      22,MPCX,1,25                                       00101450
 MPCC  LOGICS     29                                                 00101500
       SPLIT      1,MPCD,,25                                         00101550
       ADVANCE    P5                                                 00101600
       UNLINK     56,SMGQ,1,13                                       00101650
       UNLINK     56,MPCF,1,13,,MPCG                                 00101700
       ADVANCE    P3                                                 00101750
       TRANSFER   ,MPCC                                              00101800
 MPCX  TEST L     R*1,K900,SMGQ                                      00101850
       TEST E     S*1,K0,MPCJA                                       00101900
 MPCL  ASSIGN     11,R*1                                             00101950
       ENTER      *1,P11                                             00102000
       GATE LR    29                                                 00102050
       LEAVE      *1,P11                                             00102100
       TERMINATE                                                     00102150
 MPCK  ASSIGN     15,V76                                             00102200
       ASSIGN     8,P15                                              00102250
 MPCJB SPLIT      1,MPCL,,25                                         00102300
       ASSIGN     21,MPCM                                            00102350
       ASSIGN     23,K1                                              00102400
       LINK       P1,P23                                             00102450
 MPCD  LINK       56,FIFO                                            00102500
 MPCF  TRANSFER   ,MPCD                                              00102550
 MPCM  TEST E     P8,R*1,MPCK                                        00102600
       TRANSFER   ,MPCL                                              00102650
 MPCG  LOGICR     29                                                 00102700
       ADVANCE    P3                                                 00102750
       UNLINK     56,MPCF,1,13,,MPCN                                 00102800
       TRANSFER   ,MPCC                                              00102850
 MPCJA ASSIGN     8,S*1                                              00102900
       TRANSFER   ,MPCJB                                             00102950
*                                                                    00103000
*   SHIFT CHANGE SUBROUTINE                                          00103050
*                                                                    00103100
 MPCE  ASSIGN     3,MX3(1,1)                                         00103150
       ASSIGN     2,MX3(2,1)                                         00103200
       ADVANCE    MX3(1,4)                                           00103250
 MPCJ  LOGICI     20                                                 00103300
       GATE LR    30,MPCAA                                           00103350
       LOGICI     30                                                 00103400
       ASSIGN     4,11                                               00103450
 MPCAB UNLINK     V77,UNLK,ALL                                       00103500
       LOOP       4,MPCAB                                            00103550
 MPCAD ADVANCE    P3                                                 00103600
       TRANSFER   ,MPCJ                                              00103650
 MPCAA LOGICI     30                                                 00103700
       ASSIGN     4,11                                               00103750
 MPCAC UNLINK     V78,UNLK,ALL                                       00103800
       LOOP       4,MPCAC                                            00103850
       ADVANCE    P2                                                 00103900
       ADVANCE    V145                                               00103950
       TRANSFER   ,MPCJ                                              00104000
```

```
*                                                                    00104050
*                                                                    00104100
* DATA COMPILATION ROUTINE                                           00104150
*                                                                    00104200
DCRA   ASSIGN      3,MX1(5,1)                                        00104250
       PRIORITY    1,BUFFER                                          00104300
       ADVANCE     V9                                                00104350
       MSAVEVALUE  1,6,11,V84                                        00104400
       ASSIGN      5,X191                                            00104450
ARM35  ASSIGN      1,V178                                            00104500
       ASSIGN      2,V179                                            00104550
       ASSIGN      3,V180                                            00104600
       ASSIGN      4,V181                                            00104650
       SAVEVALUE   V177+,V182                                        00104700
       SAVEVALUE   V188+,V182                                        00104750
       LOOP        5,ARM35                                           00104800
       SAVEVALUE   550+,V183                                         00104850
       SAVEVALUE   1150+,V183                                        00104900
       ASSIGN      6,K1                                              00104950
       ASSIGN      1,526                                             00105000
       ASSIGN      2,551                                             00105050
       ASSIGN      3,251                                             00105100
       ASSIGN      4,1426                                            00105150
       ASSIGN      5,1476                                            00105200
ARM44  ASSIGN      7,V212                                            00105250
       SAVEVALUE   V193,V213                                         00105300
       TEST E      P6,X191,ARM43                                     00105350
       SAVEVALUE   650,V214                                          00105400
       SAVEVALUE   183+,V215                                         00105450
       ASSIGN      1,226                                             00105500
       ASSIGN      2,1451                                            00105550
       ASSIGN      3,201                                             00105600
       ASSIGN      4,701                                             00105650
ARM50  SAVEVALUE   *4,V219                                           00105700
       TEST NE     P4,724,ARM51                                      00105750
       ASSIGN      1+,1                                              00105800
       ASSIGN      2+,1                                              00105850
       ASSIGN      3+,1                                              00105900
       ASSIGN      4+,1                                              00105950
       TRANSFER    ,ARM50                                            00106000
ARM51  SAVEVALUE   725,V220                                          00106050
       ASSIGN      1,226                                             00106100
       ASSIGN      2,201                                             00106150
       ASSIGN      3,726                                             00106200
ARM52  SAVEVALUE   *3,V218                                           00106250
       TEST NE     P3,749,ARM53                                      00106300
       ASSIGN      1+,1                                              00106350
       ASSIGN      2+,1                                              00106400
       ASSIGN      3+,1                                              00106450
       TRANSFER    ,ARM52                                            00106500
ARM53  SAVEVALUE   750,V221                                          00106550
       ASSIGN      2,K11                                             00106600
DCRB   ASSIGN      3,MX1(6,P2)                                       00106650
       TEST GE     P3,K1,DCRC                                        00106700
       ASSIGN      17,25                                             00106750
       MSAVEVALUE  2+,P2,P17,P3                                      00106800
       SAVEVALUE   20+,P3                                            00106850
       SAVEVALUE   V30+,P3                                           00106900
DCRC   LOOP        2,DCRB                                            00106950
       TEST E      MX1(5,8),K0,DCRE                                  00107000
DCRD   UNLINK      27,REAA,ALL                                       00107050
       UNLINK      28,REAB,ALL                                       00107100
DCRE   BUFFER                                                        00107150
       ASSIGN      2,25                                              00107200
DCRG   ASSIGN      3,K14                                             00107250
DCRF   ASSIGN      5,MX2(*3,*2)                                      00107300
       MSAVEVALUE  2+,15,*2,*5                                       00107350
       LOOP        3,DCRF                                            00107400
       LOOP        2,DCRG                                            00107450
REED   TRANSFER    ,REEA                                             00107500
```

```
ARM43  ASSIGN      1+,K1                                                    00107550
       ASSIGN      2+,K1                                                    00107600
       ASSIGN      3+,K1                                                    00107650
       ASSIGN      4+,K1                                                    00107700
       ASSIGN      5+,K1                                                    00107750
       ASSIGN      6+,K1                                                    00107800
       TRANSFER    ,ARM44                                                   00107850
REEA   SAVEVALUE   675-,X1425       TAKE NORS OUT OF DOWN TIME              00107900
       SAVEVALUE   625-,X1425       TAKE NORS OUT OF UNSCHED DOWN TIME      00107950
       SAVEVALUE   185,V229         INHERENT AVAILABILITY                   00108000
       SAVEVALUE   186,V230                                                 00108050
       ASSIGN      2,699                                                    00108100
       ASSIGN      3,1424   ESTAB SAVEVAL NOS. FOR NORS/AVAIL               00108150
       ASSIGN      1,674                                                    00108200
ARM49  SAVEVALUE   *2,V216                                                  00108250
       ASSIGN      2-,K1                                                    00108300
       ASSIGN      3-,K1                                                    00108350
       TEST NE     P1,651,ARM48                                             00108400
       [illegible] 1,ARM49                                                  00108450
       TERMINATE                                                            00108500
ARM48  SAVEVALUE   70[illegible] V217                                       00108550
       SAVEVALUE   776,V97          SYSTEM MTBF                             00108600
       SAVEVALUE   525,V85          MTBM                                    00108650
       SAVEVALUE   524,V86        N PREVENTIVE MMH/FH                       00108700
       SAVEVALUE   523,V87          SCHEDULED MMH/FH                        00108750
       SAVEVALUE   522,V88          AVUM CORRECTIVE MMH/FH                  00108800
       SAVEVALUE   521,V89          IS CORRECTIVE MMH/FH                    00108850
       SAVEVALUE   520,V90          AVUM+IS CORR MMH/FH                     00108900
       SAVEVALUE   519,V91          DEPOT CORRECTIVE MMH/FH                 00108950
       SAVEVALUE   518,V92          TOTAL CORRECTIVE MMH/FH                 00109000
       SAVEVALUE   517,TB8                                                  00109050
*                                                                           00109100
* LOGIC TO CALL COST SUBROUTINES - CHECK SUBROUTINE BYPASS                  00109150
*                                                                           00109200
       TEST NE     X1630,K1,BRCH        X1630=1 BYPASS COST                 00109250
```

54. This check determines whether the cost logic is being employed (X1630=K1).

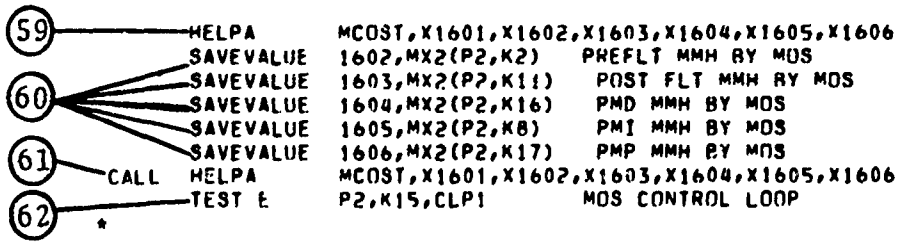


55. P2 is used to identify the MOS level. It is initially set at zero.

56. The MOS level (P2) is incremented by 1 and assigned to Savevalue 1601. This Savevalue is then incremented by 100 to signal the MCOST subroutine that it is to begin the Inspection Cost routine logic.

57. This check determines whether the last MOS values were passed. When P2=15, the transaction exits the CLP1, Inspection Cost Calculation routine, and is passed to MCOST which will compute the inspection totals and print the table. If the limit of 11 MOS levels is increased to 15, then change the logic to test for P2 less than 16.

58. Savevalues 1602 through 1606, the number of pre-flight, post-flight, daily, intermediate (PMI), and periodic (PMP) inspections, respectively, are assigned from Matrix Halfword Savevalue 7.

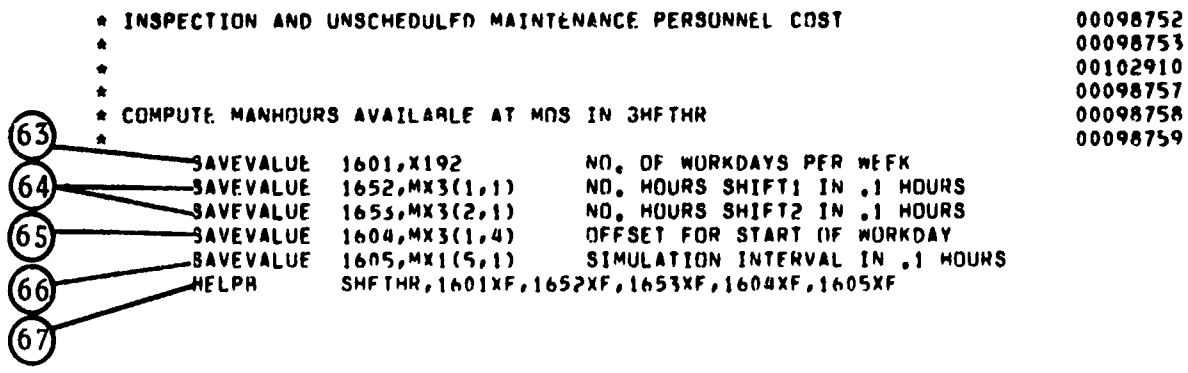


59. This HELPA block passes to MCOST the number of inspections by MOS. The values are used to determine consumable costs per inspection.

60. Savevalues 1602 through 1606, the man-hours for pre-flight, post-flight, daily, intermediate, and periodic inspections, respectively, are assigned from Matrix Savevalue 2.

61. This HELPA block passes to MCOST the inspection man-hours by MOS. Within MCOST the man-hour costs are computed and added to the consumable cost to give the total inspection cost by MOS levels. When the MOS level is equal to 15, the HELPA block passes the transaction which causes the inspection totals to be tabulated and Table III, RMS Inspection Cost, to be printed.

62. This test determines whether the last MOS inspection values were passed. When P2=15, the inspection loop is exited.



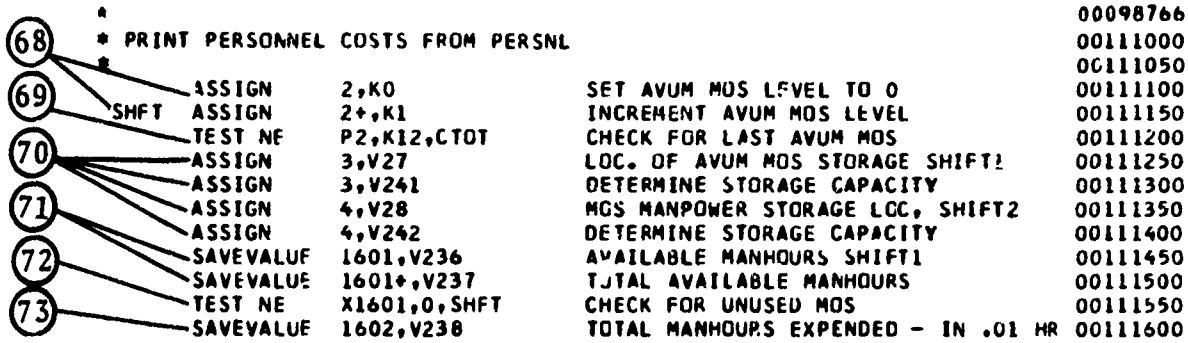
63. Savevalue 1601 is assigned the number of workdays per week.

64. Savevalues 1652 and 1653 are assigned the number of hours for the first and second work shifts.

65. Savevalue 1604 is given the value of the offset for the start of a workday.

66. Savevalue 1605 is assigned the number of hours in the simulation.

67. This HELPB block passes to the subroutine SHFTHR the values to determine the available working hours. This HELPB block provides the capability of returning the total available hours for the first shift in Savevalue 1652 and for the second shift in Savevalue 1653. These values are used in variables 236 and 237.



```
*                                                                    00098766
* PRINT PERSONNEL COSTS FROM PERSNL                                   00111000
*                                                                     00111050
      ASSIGN    2,K0              SET AVUM MOS LEVEL TO 0             00111100
SHFT  ASSIGN    2+,K1             INCREMENT AVUM MOS LEVEL            00111150
      TEST NE   P2,K12,CTOT       CHECK FOR LAST AVUM MOS             00111200
      ASSIGN    3,V27             LOC. OF AVUM MOS STORAGE SHIFT1     00111250
      ASSIGN    3,V241            DETERMINE STORAGE CAPACITY          00111300
      ASSIGN    4,V28             MOS MANPOWER STORAGE LOC, SHIFT2    00111350
      ASSIGN    4,V242            DETERMINE STORAGE CAPACITY          00111400
      SAVEVALUE 1601,V236         AVAILABLE MANHOURS SHIFT1           00111450
      SAVEVALUE 1601+,V237        TOTAL AVAILABLE MANHOURS            00111500
      TEST NE   X1601,0,SHFT      CHECK FOR UNUSED MOS                00111550
      SAVEVALUE 1602,V238         TOTAL MANHOURS EXPENDED - IN .01 HR 00111600
```

68. P2 represents the AVUM MOS level.

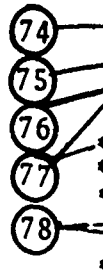
69. The number of first and second shift work center storages are limited to 11. Therefore, when P2=12, the transaction will branch to CTOT. If the limit of 11 MOS levels is increased to 15, then change the logic to test for P2 not equal to 16.

70. P3 and P4 are assigned the work center storage capacity.

71. Variables 236 and 237 provide the total number of available man-hours during the simulation interval. The number is assigned to Savevalue 1601 and will be used in MCOST to determine the indirect labor cost in Table IV, Inspection and Unscheduled Maintenance Personnel Costs.

72. This test checks each storage in turn for a zero capacity; if capacity is zero, the storage has no costs associated with it. When a storage has a zero capacity, control is passed to SHFT.

73. Savevalue 1602 is provided the total unscheduled maintenance man-hours (V238) for the MOS level represented by P2.



```
          SAVEVALUE  1603,MX2(P2,20)   OVERTIME HOURS IN .01 HR          00111650
          HELPA      MCOST,P2,X1601,X1602,X1603,X1604,X1605             00111700
          TRANSFER   ,SHFT                                             00111750
CTOT      ASSIGN     2,K15             TOTAL LINE INDICATOR            00111800
          HELPA      MCOST,P2,X1601,X1602,X1603,X1604,X1605            00111850
*                                                                      00111900
* SUBSYTEM MAINTENANCE COST ROUTINE                                    00111950
*                                                                      00112000
          SAVEVALUE  1601,MX1(5,1)     NO. OF HOURS IN SIMULATION (.1 HRS) 00112050
          HELPA      MCOST,X1601,X1602,X1603,X1604,X1605,X1606         00112100
*                                                                      00112150
```

74. Savevalue 1603 is assigned the overtime maintenance man-hours.

75. This HELPA block transfers to MCOST the values to compute the unscheduled maintenance personnel cost for the MOS level represented by P2.

76. This block transfers control to SHFT.

77. In upper block, P2 is assigned the value 15; in lower block, this value when passed to the MCOST subroutine by this HELPA block causes the personnel cost totals to be computed and Table IV, Inspection and Unscheduled Maintenance Personnel Costs, to be printed.

78. The number of hours in the simulation is assigned to Savevalue 1601 and passed via this HELPA block to the MCOST subroutine. This action initiates the tabulating and printing of Table V, Subsystem Maintenance Action.

```
* COMPANY COST STATISTICS                                                    00112200
*                                                                           00112250
          SAVEVALUE  1601,X183          FLT HRS IN .1 HR                    00112300
          SAVEVALUE  1602,X250          PLATOON MISSIONS COMPLETED          00112350
          SAVEVALUE  1603,MX1(5,1)      MODEL SIMULATION INTERVAL IN .1 HR   00112400
          SAVEVALUE  1604,X700          UPTIME/TOT TIME IN .01%             00112450
          SAVEVALUE  1605,V243          FLOWN/CALLED IN .01%                00112500
          SAVEVALUE  1606,X750          COMPLETED/CALLED IN .01%            00112550
          HELPA      MCOST,X1601,X1602,X1603,X1604,X1605,X1606              00112600
*                                                                           00112650
*  END COST ROUTINE                                                         00112700
*                                                                           00112750
BRCH      TERMINATE  1                                                     00112800
REAA      ASSIGN     2,K3                                                  00112850
          ASSIGN     3,MX1(5,7)                                            00112900
          MSAVEVALUE 2+,4,17,P3                                            00112950
          SAVEVALUE  V37+,P3                                               00113000
          SAVEVALUE  32+,P3                                                00113050
REEG      SAVEVALUE  90+,Mi                                                00113100
          SAVEVALUE  187+,M1                                               00113150
          SAVEVALUE  V185+,M1                                              00113200
          SAVEVALUE  600+,M1                                               00113250
          SAVEVALUE  V184+,M1                                              00113300
          SAVEVALUE  1200+,M1                                              00113350
          SAVEVALUE  V195+,M1                                              00113400
          SAVEVALUE  675+,M1                                               00113450
          SAVEVALUE  V194+,M1                                              00113500
          SAVEVALUE  1275+,M1                                              00113550
          TERMINATE                                                        00113600
```

79. Savevalues 1601, 1602, and 1603 provide values which are used in MCOST to determine flight hour costs. Savevalue 1601 is assigned X183, the total number of hours flown during the simulation. Savevalue 1602 is provided the number of missions completed (X250). Savevalue 1603 is the total number of simulated hours (MXI(5,1)).

80. Savevalues 1604, 1605, and 1606 provide the percentages for uptime/total time (X700), missions flown/missions called for (V243), and missions completed/missions flown (X750), respectively.

81. This HELPA block initiates the tabulation and printing of Table VI, RMS Cost Summary, in the MCOST subroutine.

82. This block was modified to include the label BRCH.

```
REAB   TABULATE   9                                                    00113650
       SAVEVALUE  36+,M1                                               00113700
       SAVEVALUE  63+,M1                                               00113750
       TERMINATE                                                       00113800
PMCB   TERMINATE                                                       00113850
DATA   PRIORITY   0                                                    00113900
       ADVANCE    K60                                                  00113950
DATA1  ASSIGN     2,K4                                                 00114000
DATA2  ADVANCE    230                                                  00114050
       TEST E     V224,K0,DATA4                                        00114100
DATA3  ADVANCE    K10                                                  00114150
       LOOP       2,DATA2                                              00114200
       ADVANCE    K710                                                 00114250
       TEST E     V224,K0,DATA6                                        00114300
DATA5  ADVANCE    K10                                                  00114350
       TRANSFER   ,DATA1                                               00114400
DATA4  SAVEVALUE  188-,V225                                            00114450
       SAVEVALUE  187-,V227                                            00114500
       TRANSFER   ,DATA3                                               00114550
DATA6  SAVEVALUE  188-,V226                                            00114600
       SAVEVALUE  187-,V228                                            00114650
       TRANSFER   ,DATA5                                               00114700
       START      1,,,1                                                00114750
       REPORT                                                          00114800
       EJECT                                                           00114850
 44    TEXT       R&M DIVISION, PRODUCT ASSURANCE DIRECTORATE           00114900
       SPACE      2                                                    00114950
 52    TEXT       R & M SIMULATION (RMS) MODEL                         00115000
 52    TEXT       ---------------------------                          00115050
       SPACE      2                                                    00115100
 20    TEXT       AIRCRAFT STATISTICS                                  00115150
       SPACE      2                                                    00115200
 20    TEXT       TOTAL FLYING HOURS                                   M00115250
#X183,2/1LXXXX.X#                                                      00115300
*                                                                      00115350
*                                                                      00115400
 20    TEXT       FLYING HOURS - COMPLETED MISSIONS                    *00115450
#X275,2/1LXXXX.X#                                                      00115500
 20    TEXT       FLYING HOURS - ABORTED MISSIONS                      *00115550
#X1500,2/1LXXXX.X#                                                     00115600
 20    TEXT       FLYING HOURS - TEST HOPS                             *00115650
#X1450,2/1LXXXX.X#                                                     00115700
       SPACE      2                                                    00115750
 20    TEXT       MISSION RELIABILITY                                  *00115800
#X750,2/2LXXXX.XX#                                                     00115850
 20    TEXT       SYSTEM MTBF                                          *00115900
#X776,2/2LXXXX.XX#                                                     00115950
       SPACE      2                                                    00116000
 20    TEXT       INHERENT AVAILABILITY                                *00116050
#X185,2/2LXXXX.XX#                                                     00116100
 20    TEXT       ACHIEVED AVAILABILITY                                *00116150
#X186,2/2LXXXX.XX#                                                     00116200
 20    TEXT       OPERATIONAL AVAILABILITY                             *00116250
#X700,2/2LXXXX.XX#                                                     00116300
       SPACE      2                                                    00116350
 20    TEXT       MEAN TIME BETWEEN MAINTENANCE                        *00116400
#X525,2/2LXXXX.XX#                                                     00116450
 20    TEXT       MEAN TIME TO REPAIR                                  *00116500
#X517,2/2LXXXX.XX#                                                     00116550
       SPACE      2                                                    00116600
 20    TEXT       AVUM PREVENTIVE MMH/FH (INSPECTIONS & SERVICING)     *00116650
#X524,2/2LXXXX.XX#                                                     00116700
 20    TEXT       AVUM SCHEDULED MMH/FH (INSPECTIONS & TBO'S)          *00116750
#X523,2/2LXXXX.XX#                                                     00116800
 20    TEXT       AVUM CORRECTIVE MMH/FH                               *00116850
#X522,2/2LXXXX.XX#                                                     00116900
 20    TEXT       AVUM & INTERMEDIATE CORRECTIVE MMH/FH                *00116950
#X520,2/2LXXXX.XX#                                                     00117000
 20    TEXT       INTERMEDIATE CORRECTIVE MMH/FH                       *00117050
```

```
#X521,2/2LXXXX.XX#                                                    00117100
 20    TEXT       DEPOT CORRECTIVE MMH/FH                           *00117150
#X519,2/2LXXXX.XX#                                                    00117200
 20    TEXT       TOTAL CORRECTIVE MMH/FH                           *00117250
#X518,2/2LXXXX.XX#                                                    00117300
*                                                                     00117350
*                                                                     00117400
*                                                                     00117450
*                                                                     00117500
*                                                                     00117550
*                                                                     00117600
*                                                                     00117650
*                                                                     00117700
*                                                                     00117750
*                                                                     00117800
*                                                                     00117850
*                                                                     00117900
*                                                                     00117950
*                                                                     00118000
*                                                                     00118050
*                                                                     00118100
       OUTPUT                                                         00118150
       END                                                            00118200
```

5.4 Four Cost-Information Tables Generated by RMS COST Model Program

TABLE III. RMS INSPECTION COST

	RMS INSPECTION COST						
MOS LEVEL	PREFLIGHT	POST FLIGHT	DAILY	INTERMEDIATE	PERIODIC	TOTAL	PERCENT
PERIODIC MOS	0.	0.	0.	0.	1047.	1047.	4.22
PREFLIGHT	3670.	0.	0.	0.	0.	3670.	14.79
DAILY MOS	0.	0.	20092.	0.	0.	20092.	80.99
TOTAL	3670.	0.	20092.	0.	1047.	24809.	100.00
PERCENT OF TOTAL	14.79	0.0	80.99	0.0	4.22	100.00	

TABLE IV. RMS INSPECTION AND UNSCHEDULED MAINTENANCE PERSONNEL COSTS

	INSPECTION AND UNSCHEDULED MAINTENANCE PERSONNEL COSTS				
MOS LEVEL	DIRECT REGULAR	DIRECT OVERTIME	INDIRECT	TOTAL	PERCENT
ON A/C MOS	10804.	0.	61767.	72571.	30.00
PERIODIC MOS	1719.	0.	34567.	36286.	15.00
PREFLIGHT	3670.	0.	8425.	12095.	5.00
DAILY MOS	20092.	0.	28289.	48381.	20.00
ON A/C MOS	10804.	0.	61767.	72571.	30.00
TOTAL	47089.	0.	194815.	241904.	100.00
PERCENT OF TOTAL	19.47	0.0	80.53	100.00	

TABLE V. SUBSYSTEM MAINTENANCE ACTION

	SUBSYSTEM MAINTENANCE ACTIO'												
	AVUM				AVIM		DEPOT		PART				
SUBSYSTEM	NO. OF ON-EQUIP REPAIRS	NO. OF REMOVE REPLACE	NO. OF OFF-EQUIP REPAIRS	TOTAL COST	NO. OF REPAIRS	TOTAL COST	NO. OF REPAIRS	TOTAL COST	NO. OF CONDEMN	SALVAGE VALUE	PIPELINE REPL. COST	TOTAL COST	PERCENT OF TOTAL
STRUCTURE	1	1	1	370.	0	0.	0	0.	0	0.	0.	370.	0.22
LANDING GEAR	0	2	2	288.	0	0.	0	0.	0	0.	0.	288.	0.17
ENGINE ASSY	15	24	10	6865.	4	533.	6	61047.	3	-15806.	52686.	105325.	61.88
ROTAT.COMPON	14	77	12	13986.	13	4999.	23	29454.	23	-6217.	20722.	62944.	36.98
INSTRUMENTS	1	0	0	49.	0	0.	0	0.	0	0.	0.	49.	0.03
ELECTRICAL	2	5	3	397.	1	12.	0	0.	1	-1.	3.	411.	0.24
FUEL	1	0	0	7.	0	0.	0	0.	0	0.	0.	7.	0.00
FLT CONTROLS	2	5	2	270.	1	5.	0	0.	2	-198.	650.	727.	0.43
NAV/COM COMP	2	2	0	49.	2	29.	0	0.	0	0.	0.	78.	0.05
TOTAL	38	116	30	22281.	21	5578.	29	90501.	29	-22218.	74057.	170199.	100.00
PERCENT OF TOTAL				13.09		3.28		53.17			30.46	100.00	